AMERICAN ARTISAN

ARM AIR HEATING • SHEET METAL
ONTRACTING • AIR CONDITIONING

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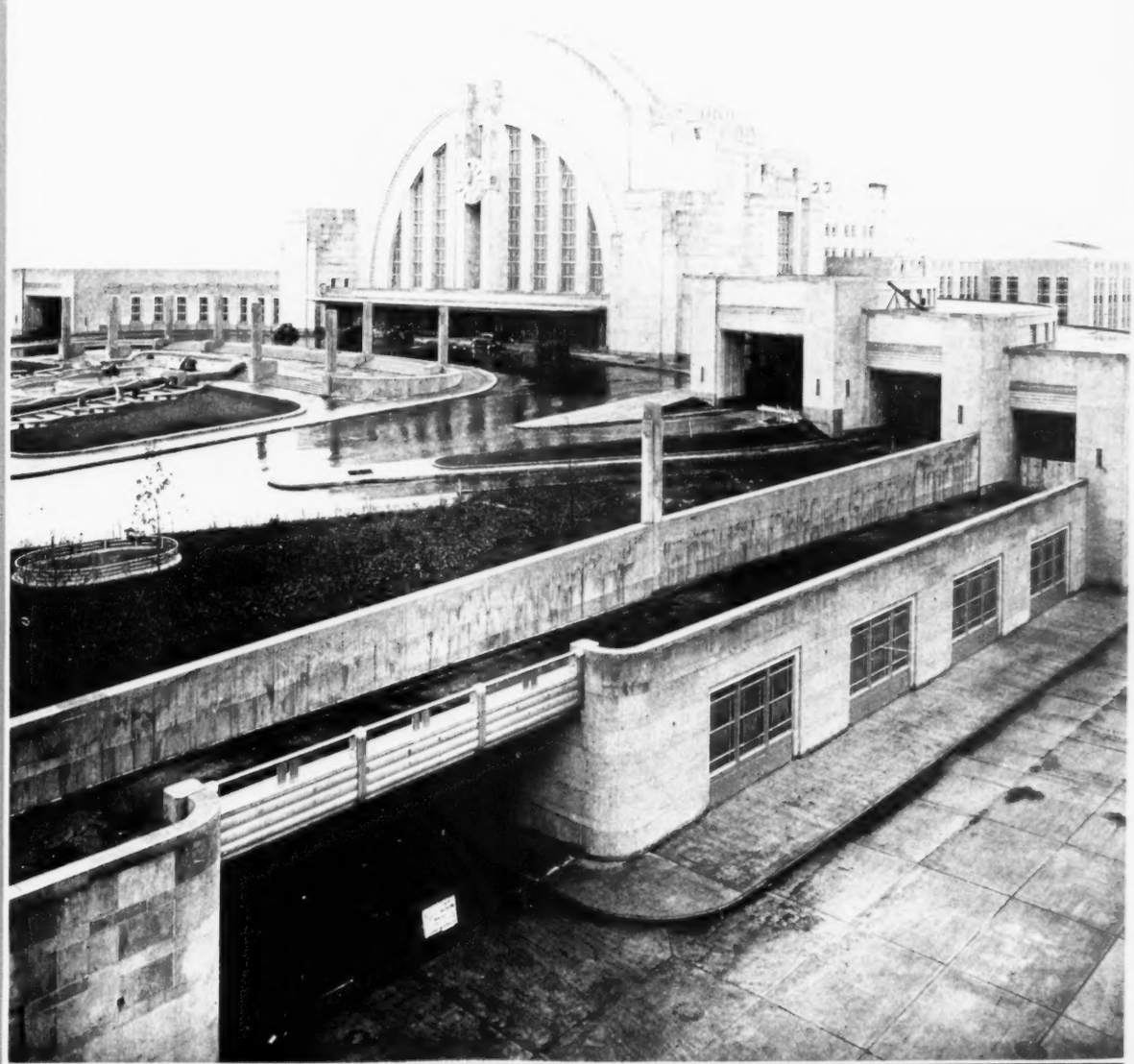

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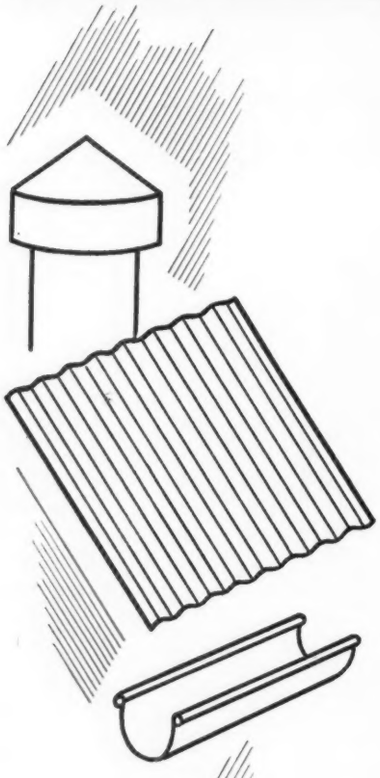

Your business next year and the year following depends in large measure on the good-will of the customers you served last year and in the years before. And the degree of good-will earned is directly proportional to the quality of the materials you installed and the craftsmanship displayed.

Toncan Iron is a real business builder for the sheet metal contractor, because it keeps customers contented. Installed as roofing and siding, eaves troughs, down spouts, ventilators and for interior work wherever sheet metal is required, it builds good-will, because it grows old slowly and is economical in service.

Toncan Iron is no common metal. It represents twenty-five years of metallurgical endeavor. And the result is an alloy of refined iron, copper and molybdenum—an alloy that stands first among the ferrous metals in rust-resistance, after the stainless steels—an alloy that is so easy to work that the saving in fabricating time often more than offsets its slightly higher cost.

Hundreds of applications of Toncan Iron are illustrated and described in "The Path to Permanence." Sent upon request.

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FURNACES and SHEET METALS AND Warm-Air Heating

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More than 7,000 copies of this issue are being distributed.

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True Talks

with successful sheet metal men

SERIES No. 3 **NUMBER 7**

MONEL METAL HOT DOG COOKERS START NEW BUSINESS TOWARD SUCCESS

Chicago Sheet Metal Man Had Courage to Branch Out for Himself in Midst of Depression—and Forged Ahead

Mr. Frank Schneider, founder and proprietor of the Atlas Sheet Metal Works, Chicago, Ill.

MR. FRANK SCHNEIDER, of Chicago, wasn't worried by a seemingly impossible task when he started the Atlas Sheet Metal Works.

(Atlas, you may remember, was the boy who carried the World on his shoulders.)

Only 9 years ago Mr. Schneider came over from Germany, where he had learned his trade as a sheet metal worker.

After working for several Chicago firms, he started his own business two years ago... in the shadow of the Great Depression.

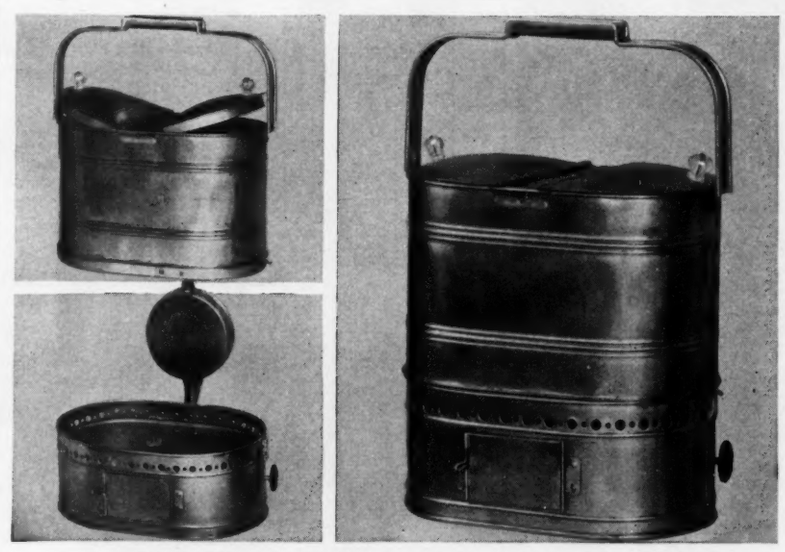
Courage... with an idea behind it

Mr. Schneider developed a Hot Dog Cooker, for street peddlers, made of Monel Metal.

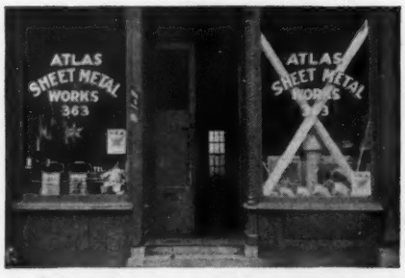
Not the kind of line that occurs to most people. Yet it represented a sizeable market—and sold like hot dogs!

Monel Metal's remarkable qualities opened the way to other quick selling lines.

Trays for photographic solutions, covers for containers used in soda fountains, spun rings and tops for fruit juice jars (constructed so that the jars may be inverted to permit contents to run through a refrigerating part)... these are some of the things Atlas Sheet Metal Works manufactures with Monel Metal.



The Monel Metal Hot Dog Cooker made by Atlas Sheet Metal Works.
(Left) *The two separate parts, oven and stove.* (Right) *The two parts assembled for use.*



Exterior view of Atlas Sheet Metal Works, 363 West Chicago Avenue, Chicago, Ill.

There's no end to the markets for Monel Metal products

Mr. Schneider's success demonstrates that all a sheet metal man needs is a little thinking, *plus Monel Metal*, if he wants plenty of jobs to keep him busy.

Let us send you complete information about Monel Metal's *absolute freedom from rust, stubborn resistance to all kinds of corrosion, steel-like strength, silvery beauty and highly satisfactory fabricating qualities* – and about the sales literature we have prepared for your use, to bring Monel Metal jobs right into your shop—just drop us a line.

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MONEL METAL

THE INTERNATIONAL NICKEL COMPANY, INC., 67 WALL STREET, NEW YORK, N. Y.

Naturally people buy Copper... when they *know* that it will save them money

MANY contractors *today are doing* a good volume of sheet metal business in repairing and remodeling work. And, by selling Copper as the most economical metal to use, they are doing business on a *satisfactory* basis.

There are many prospects for durable Copper in your territory, too. Among them, many should make needed repairs *right now.* Most of these understand the advantages of Copper, and will pay a fair price for it when they realize how little more than rustable metal it really costs.

Successful contractors have told us time and again that Anaconda Copper is *easier to sell* than other brands. It represents *known value* . . . is backed by the industry's best known name, and is accepted everywhere as the standard of sheet metal quality. Leading sheet metal supply houses carry Anaconda Copper in sheets, rolls and Economy strips, and copper gutters, leaders, elbows and shoes trademarked ANACONDA.

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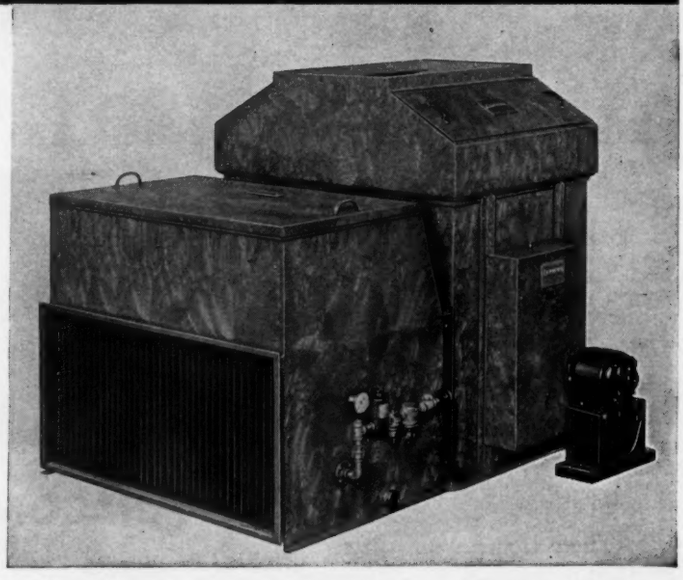
In equipment, raw materials, and experience Inland is "Able..." The more difficult the requirement, the more valuable Inland equipment, control of raw material quality, and experience can be to you. INLAND STEEL COMPANY, 38 S. Dearborn St., Chicago, Ill.



Produced of Inland Steel *by the L. J. Mueller Furnace Company, Milwaukee. At top:* Gas Era furnace. *At left:* Climator register. *Below:* Climator fan, air washer and filter, adapted for addition of refrigeration unit when desired.

NRA MEMBER U.S. WE DO OUR PART

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VOLUME 102 **AMERICAN ARTISAN** NUMBER 12

WARM AIR HEATING • SHEET METAL CONTRACTING • AIR CONDITIONING

Use Your "Spark Plugs"

The other evening we had the pleasure of attending one of the regular meetings of a mid-west association which, like many of its kind, has had ups and downs through the years without ever getting very far as an organization and without ever accomplishing very much of a really constructive nature.

This association is not unusual—as a matter of fact it is quite typical of dozens or hundreds of associations in our field and others.

In years gone by most associations enjoyed good times when some urgent piece of business had to be handled. Usually this urgent piece of business had to do with disciplining some wayward brother or preparing to fight legislation detrimental to our work.

By and large about the only thing which kept life in the group mentioned was the appeal of the social angle and like all such effort the social angle proved pretty useless in collecting dues and keeping members interested.

The real reason, we believe, why this group did not break up altogether is the fact that in the group there are some real "spark plugs," men who really believe in group prestige and are willing to go out of their way in time and trouble to work for their association.

If we take any association—it matters little whether it be a local, state or national organization in our field or the smallest or largest in any other field and analyze that association's reasons for existence we are pretty sure to find that the basic reason is that it has one or more "spark plugs."

These active members are to an association what the spark plug is to an automobile motor—when they function the mechanism runs; when they fail the whole mechanism stops.

We truthfully believe that these workers have never been given due credit. Oftentimes their activity is laughed off with the statement—"Yea, so and so works because he gets the gravy." Or a left handed compliment may be paid as—"Sure he works, but I don't and I get just as much good out of the effort as he does."

If we are really honest we must admit that no association ever established has been able to operate very long without the spark plug; and no organization ever will.

Today is the day of the association. The national government has sanctioned their formation; has, in fact, given associations a practically free hand in eliminating the burs which have been under the saddle. As a result every business man is interested in his association because he sees in it a means of ridding himself of past grievances. We hope that his interest will persist, but we can be sure that it will not if his association fails to get for him the things he thinks he ought to have.

There is little use denying that association members generally are "riders." They want the benefits—if they don't have to work too hard. They want the profits—if their usual routine is not interrupted. This is human nature and we can't change it. We can, however, recognize this failing and see to it that every effort has both "spark plugs" and "others."

One thing which will keep members "sold" is a program covering plans which lead to profit, than which there is no stronger appeal. The men to organize these programs and to steer them along the course to attainment are the "spark plugs." They exist in every organization and their ability should be recognized and made use of.

✦ ✦

Replace, Remodel

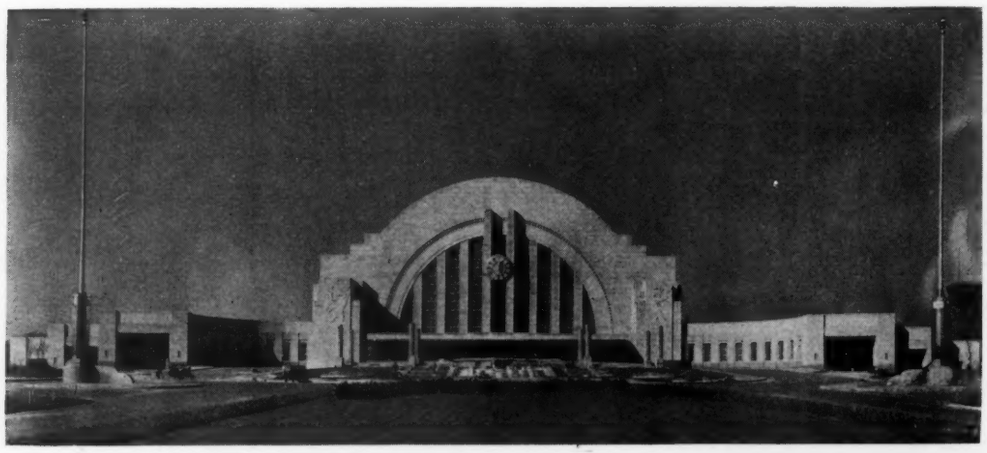
In the November issue we published an article in the Repair, Replace, Remodel series dealing with the feasibility of telling the customer all about the advantages of buying furnace remodeling in order to fix up his basement and get some return on its investment.

That the idea has value is indicated, we feel, in the article in this issue telling how an Ohio contractor has built up a substantial business volume in selling this same plan.

The methods of explaining and selling the idea to the prospect as outlined in this contractor's activities makes interesting reading. The real point, of course, is that in this day when most business men are claiming that there isn't anything new to talk about, our industry has one of the world's best known developments right in our lap.

That development is air conditioning. Everyone is talking about it and to our benefit no one knows very much about the subject. It is our baby. Its ramifications are endless. Its sales possibilities are enormous. It is ours to make of it what we will.

Basement remodeling is only one small phase, but we probably would never have heard of livable basements had not forced air come into vogue being in its wake, automatic heat, decoration, recreation rooms and what may turn out to be the most profitable phase of air conditioning—the remodeling of old plants.



Cincinnati's Union Station—Monumental Roofing, Waterproofing, Sheet Metal Project

EARLY this spring the city of Cincinnati, Ohio, dedicated its new union station—designed by Fellheimer and Wagner, Architects, New York City—one of the most important structures completed in the last five years.

While the general features of plan and engineering are basically important, it is our trades—sheet metal, waterproofing and roofing—which formed one of the most interesting and important sections of the general construction plan.

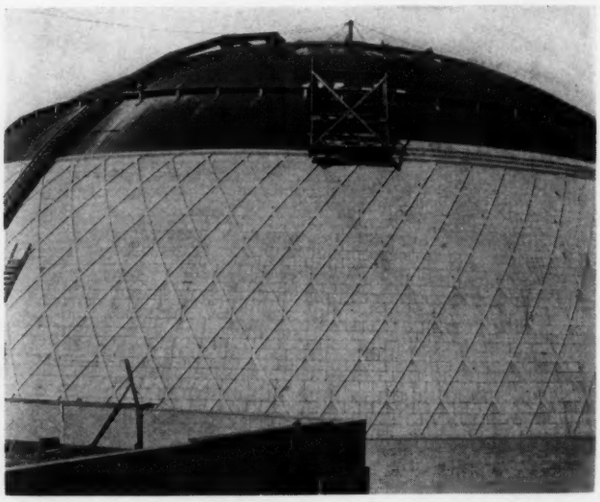
The reasons for this importance of the sheet metal, roofing and waterproofing contracts are due first to the plan of the structure which calls for a tremendous half dome, unlike anything ever built before, a huge expanse of flat or nearly flat roof area subject to intense heat in summer, the location of the station on low river land, much of the area filled in after the station was built or building, and to the co-relation of design and materials which, as will be explained, established problems upon whose successful solution depended the appearance and service rendered. In general, the sheet metal, roofing and waterproofing work divides itself into three specific groups.

All three phases were covered in one contract let to The Breese Bros. Roofing Co., Cincinnati. An idea of the size of the contract is gained from such general figures as 50,000 pounds of copper for general sheet metal work, 46,000 pounds of copper for flashings (divided 28,000 feet of cap and base flashing and 2,100 feet of through wall), 500 tons of terra cotta roofing tile, 11,000 squares of waterproofing on the plaza, 7,400 squares of waterproofing for roofing, walls of tunnels, toilet floors, ramps, underground rooms, 360,000 pounds of sheets for train shed roofs.

The Dome

The most spectacular part of the work centered around the dome. In elevation this dome presents a true half circle from the front and a slightly flattened quarter sphere from the side. The

The concrete surface was leveled off with mortar and waterproofed with 25-foot strips of felt and asphalt laid with 12-inch top and 6-inch vertical laps. The photo also shows the special scaffold and its rigging.

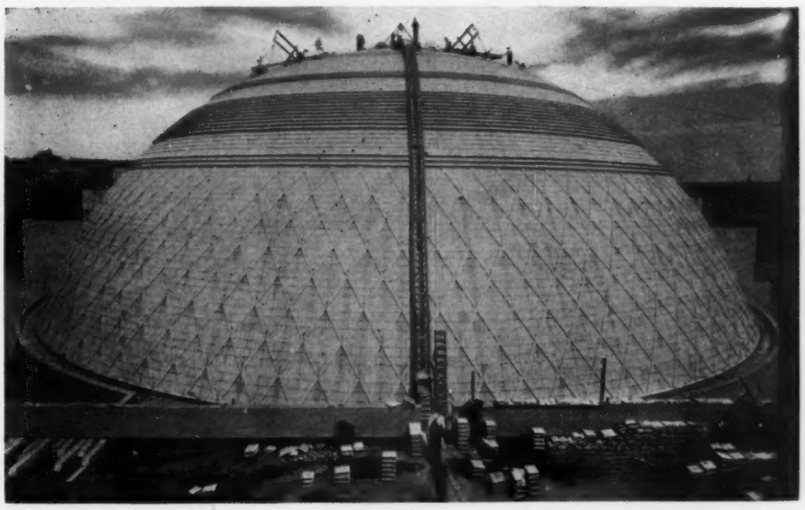


The tile has a two-way ribbed pattern necessitating extreme care in getting the correct pitch to the ribs. The unevenness of the concrete set up quite a problem for the tile setters. The traveling scaffold and material runway are shown.

dome across the front is 192 feet, while the circumference at the dome base from one front outside corner to the opposite outside corner is 302 feet.

This dome was constructed of concrete on steel framing, and due to the large surface and the difficulty in getting true surfaces on slopes of the dome considerable unevenness occurred in the surface. Of more importance was the fact that when Breese Brothers came to lay the tile they found that the finished concrete was $2\frac{7}{16}$ inches larger in circumference than the architect's plan.

Since the dome is covered with patterned terra cotta, this difference proved a serious problem.



This complete view of the dome shows the material tramway down the center; the ribbed pattern of the lower and stepped pattern of the upper parts of the dome; the material sorting space at the base; and gives a good idea of the large size of the dome.

Dome Problems

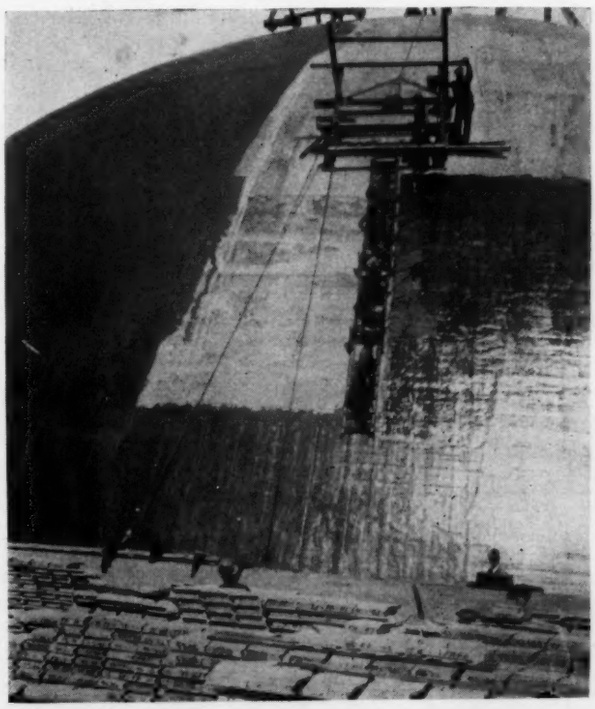
The unevenness of the concrete was checked by a template cut to the true arc of the architect's plan and trued from the roof course by course working in the course below the one being laid. The hollows shown by the template were filled in with a heavy mortar to bring the surface to a true facing.

As stated, the dome is covered with terra cotta laid over waterproofing. The concrete was first given a mopping with asphalt and in this mopping the felt was laid. Felt strips were cut 25 feet long and as shown in some of the illustrations these strips were laid vertically on the dome. The felt strips were nailed with masonry nails using copper disks, button shaped, and flattened in nailing. The strips were lapped 12 inches along the top and 6 inches vertically.

While the laying procedure was standard the methods of applying worked out by Breese Bros. proved one of the interesting and labor-saving phases of the job.

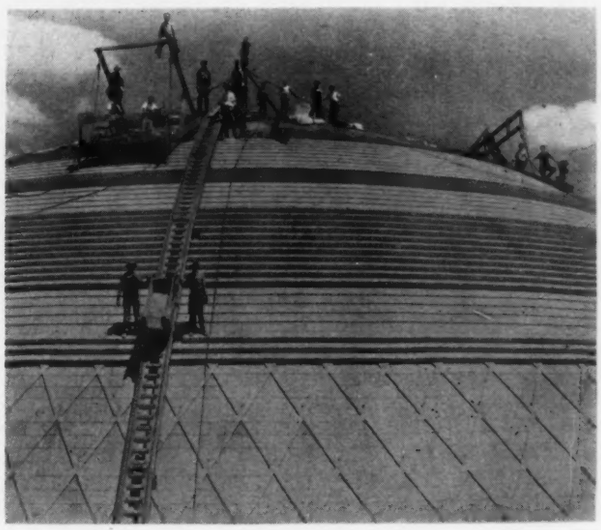
The basis of the laying plan was a special rigging operated from the peak of the dome. The apparatus consisted of a guyed mast to which was connected by cable the movable scaffold shown in the photographs. This scaffold could be raised and lowered by a winch or swung around the circumference of the dome as work progresses. Furthermore the working shelf could be adjusted by rigging the arms of the scaffold. Use of this scaffold eliminated the customary type of complicated scaffolding, either pipe or wood, and made possible large savings in erection costs.

The scaffold rested on the concrete and not on the waterproofed areas. To facilitate laying of felt and mopping a ladder with bucket steps as long as the 25-foot felt strips was suspended from the scaffold as shown and from the ladder which also rested on the uncovered concrete the



The dome was waterproofed from this special scaffold with a three-man crew. The scaffold and its rigging are explained in detail in the article. The interesting feature is the fact that this rig eliminated expensive and cumbersome pipe or wood scaffolding.

Below is a close-up of the material tramway, the tile scaffold and the crew which handled the job.



The roof of the waiting room is insulated, has a 20-year built-up roof and for the exterior surface heavy tile. The photograph above shows the roofers laying the built up roof while the sheet metal mechanics are placing the flashing as the roofers go along.

three-man crew mopped the concrete and laid the felt. As work progressed the scaffold was moved around the dome.

The waterproofing crew were supplied with materials hoisted to the peak of the dome and lowered to the scaffold on bucket carriages connected to a separate winch or lowered to the scaffold. This supply system to the waterproofing crew was supplemented by a hoist system which raised materials to the circular base of the dome and from this base to the peak via a cable-way hoist car.

Dome Tile

The exterior facing of the dome is terra cotta laid to form a ribbed pattern around the lower half of the dome and stepped horizontally around the upper half of the dome.

When it came time to lay the tile it was found that the finished concrete surface was $2\frac{7}{16}$ inches larger in circumference than the architect's plan.

The difference was compensated for by making spot measurements at frequent intervals around each course of tile and adjusting the mortar joint between measuring points in the course to take up the error.

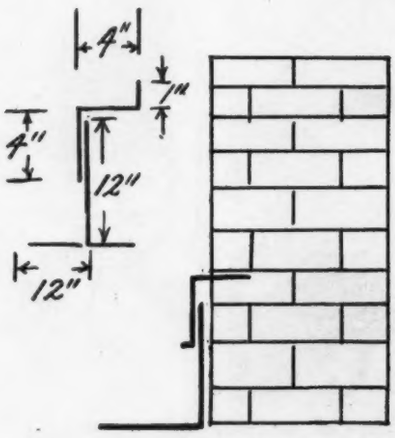
In laying the tile, the scaffold system used for waterproofing proved its real worth. The scaffold which hung from the mast was so designed that on the lower two-thirds of the dome the bottom of the scaffold was clear of the roof and tile resting only on the concrete above the course being laid. This made it possible to lay tile directly under the scaffold. The design of the scaffold and its operation in use are shown in some of the photographs. On the upper one-third of the dome arc where the roof flattens out, the lower edge of the scaffold was held off the tile by a leg at each bottom corner.

The working scaffold was served by a bucket hoist running on the track shown in one of the photographs and this track also served as a ladder to get up on the dome. The tile were raised by the material hoist to the base of the dome where a sorting crew arranged the tile by pattern just as it went on the dome, loaded the tile car which was hoisted to a runway around the dome at a level with the working scaffold. The design and operation of this scaffold and the efficient handling of material is credited to Robert A. Manoque, foreman for The Breese Bros. Roofing Co.

Decks

The plan of the building called for a number of decks, the largest being the pitched roof above the waiting room. This roof is wide and very long and is pitched two ways from the ridge down the center. The roof is concrete, poured in place and because of the vast expanse exposed to the sun the whole roof is heavily insulated.

The insulation and built-up roofing has been laid and the tile setters are placing the tile on the waiting room roof. Expansion joints cut the roof in three places longitudinally and every 25 feet transversely.



This detail shows construction of the wall flashing of which there was some 28,000 feet.

The insulation used consisted of a 1-inch layer of Celotex laid in the first mopping over the concrete. The insulation was then covered with a Carey 20-year bonded roof laid as shown in one of the photographs. The surface of the roof is tile laid from eave to ridge and used for two reasons —prevention of creep of the asphalt and provision for a long lived roof.

Under the driveways of the plaza and under the entire floor of the main waiting room there was laid in hot asphalt a 2-inch layer of compressed cork, which acted both as an insulator and a sound absorber.

The photographs of the train shed roof show details of the methods of handling materials, laying the insulation, felt and tile and the appearance of the completed roof especially the expansion joints which cut the roof into squares. These expansion joints

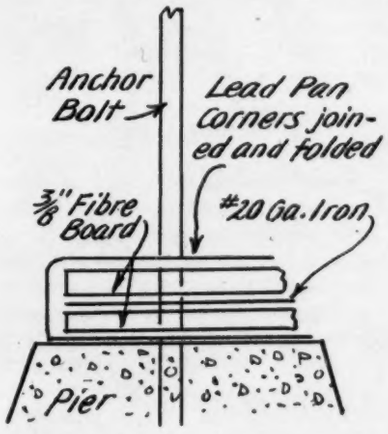
This view, while small, shows a few of the train platform canopies. More canopies lie on the other side of the waiting room. The photo also shows a side view of the dome and the side wings.

form a system of elastic joints at 25-foot intervals along the length of the roof. The roof area is squared off for expansion by using three longitudinal joints—one at the gutter, one at the ridge and one at the center point between eave and ridge. The ridge joint is metal while the other two longitudinal and the cross joints are special joints consisting of ½-inch strips of special asphalt in which is incorporated a fibrous material sandwiched between two sheets of saturated felt. This material extends completely through the slab and expands or is compressed as the length of each concrete slab changes.

Flashings

As stated in the first part of this article, some 30,000 feet of cap, base and through wall flashing was used around roofs and decks, under all copings and in walls, of the many decks and setbacks of the station.

The base and cap flashings were used as two-piece construction all through the building. The base flashing was applied as the built-up roof was laid with the cap flashing placed as soon after roofing as possible. Lengths

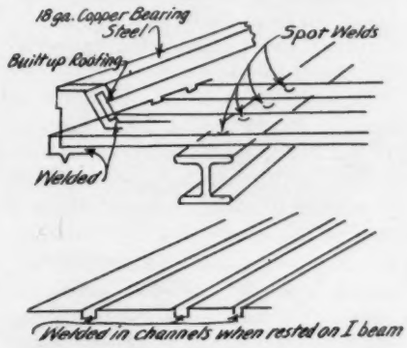


Breese Bros. placed lead vibration pans of this construction under all columns which support the approaches and driveways.

were generally about 10 feet and all joints were soldered. The cap flashing was turned out for a stiffening lip and caulked into the wall backup.

Train Sheds

The numerous train sheds of the station presented several inesting problems in sheet metal application due to the general construction of the shed and the fact that 18-gauge material was specified. Furthermore, all this



Formed sheets as shown were spot welded to the beams of the train sheds to form a flat surface for the insulated, built-up roof.

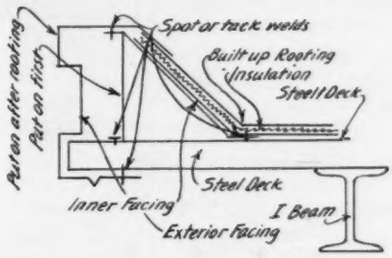
metal had to be spot or tack welded to form a tight pan.

The general design of the shed consists of T-shaped columns supporting longitudinal I-beams making a lattice structure requiring some flat and solid surface for the built-up roof. To form this roof platform the contractor used a formed siding as shown in a detail with depressed channels the bottom of which rest on the I-beams. These formed sheets were then electrically spot welded to the structural frame as shown in the detail.

The formed sections constitute the foundation for the built-up roof, but some type of edge facing had to be developed to make water drain inward and finish off the roof edges. The facing finally developed is made from two sheets formed as shown in the sketch and welded to each other and to the structural frame.

Miscellaneous Work

The Breese Co. contract also included the waterproofing of the walls of the approach promenade —in itself a large job. As stated, much of the ground in front of the station is fill and use was made of this fact to utilize the area as an underground garage.



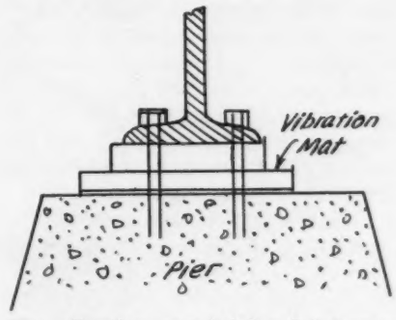
The outer edges of the train sheds were finished off with a construction as shown here. Welding was used to reduce time and labor, cut cost and get a better job.

The walls and roof are concrete filled in and covered with earth for landscaping.

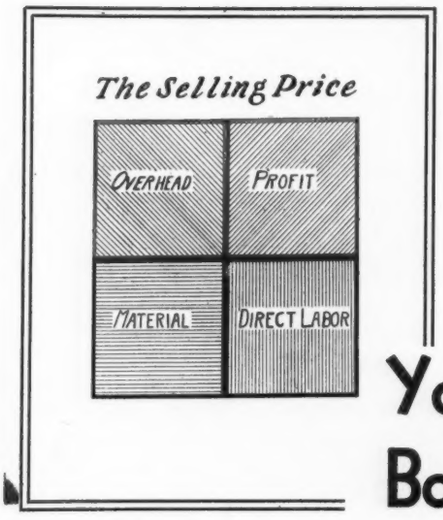
All walls of this promenade together with the piers were waterproofed by a two-ply fabric and hot asphalt where the surface was destined to come in contact with earth. Where walls and piers are free standing, two coats of asphalt emulsion were applied as waterproofing.

The roof of this promenade is covered with a twenty-year bonded roof on the concrete surface.

An interesting detail included in the Breese contract is the vibration mats placed under all columns under traffic lanes, of which there are some 95 throughout the structure. These mats were necessary because vibration would be serious in a structure of this type. One of the sketches shows the design and application of these mats.



The vibration mat is placed between the pier and the metal foot of the column.



Your Bookkeeping Problems

By J. G. Dingle

✦ ✦ ✦

Dear Mr. Dingle:

With the intentions of installing a set of books for a sheet metal shop, I have been reading your articles in the American Artisan of 1930.

On page 38 of this publication dated Oct. 25, 1930, you show forms of journals—The sales journal having columns for sales of materials and one for sales of labor.

I will thank you to explain how you would arrive at the different proportions for these different accounts, also what advantage you claim can be derived by breaking the sales account into these accounts in the journal.

Yours very truly,
F. C. Robinson, Colorado.

✦ ✦ ✦

Dear Mr. Robinson:

I appreciate very much the fact that you are interested in improving your bookkeeping methods, and hope that you will find some help in the series of articles which appeared in the Artisan.

In answer to your question as to the separation of labor and materials in the sales journal as illustrated, may I call your attention to an article published in May 9, 1932, in which we used as illustration some squares which were labeled Material, Labor, Overhead and Profit. A reading of this article will assist you in understanding my idea of separating the two.

The principal purpose of segregating material and labor in sales is for the purpose of permitting a comparison of the cost of labor and the return therefrom. Your prices are usually built up by determining first, the amount of material necessary for the job and then determining the labor required to convert that material into usable form. Using these two elements separately in determining your costs, it is easily possible to segregate the selling prices into material and labor, using as the basis the approximate or exact ratio which material cost bears to labor cost.

In other words, assuming a material cost of $25.00 and a labor cost of $20.00 and a selling price of $100.00, which, of course, includes overhead and profit. Labor is 4/9 and material 5/9 of the direct costs. Therefore, 4/9 of $100.00 would be approximately $44.00 and the material would be $56.00. Of course, I am omitting the cents in each case. I am breaking the sale into $44.00 of labor and $56.00 of material.

A local printing house has stocked the forms as illustrated in the Artisan and for the complete system, with supplies sufficient for the average shop for one year, is priced at $20.00, including the binders. This printing house is the Illinois Office Supply Company, Ottawa. I mention this for your convenience.

✦ ✦ ✦

American Artisan:

In 1930 the Artisan ran a series of articles on cost accounting written by Mr. J. G. Dingle, C. P. A. At the time these were run I had not the time to give them much study, but saved them and of late business has fallen off so have had the time to give them quite a lot of study; he has no doubt covered the subject quite thoroughly, however, as I knew almost nothing about the double entry system when I began to study his articles, some of the things he writes about are not quite clear to me.

Seems to me if he could give us a chart of accounts showing which carry a Debit or Credit balance, am sure this would help his readers. Another thing, I am very much interested in the work in progress account as shown in Mr. Dingle's articles, however, can't quite grasp it, seems to me if he could give us this account shown on his journal and ledger sheets, in the same way he did the general ledger accounts, it would make the matter more clear.

I say let us have more from Mr. Dingle, he knows his stuff.

Yours very truly,
C. C. Reyman, Colorado.

✦ ✦ ✦

Dear Mr. Reyman:

First, let me say it gives me great pleasure to know that you have found my articles on bookkeeping interesting and instructive. They were written with the hope that they would be of value to the Artisan readers and we appreciate such letters as yours.

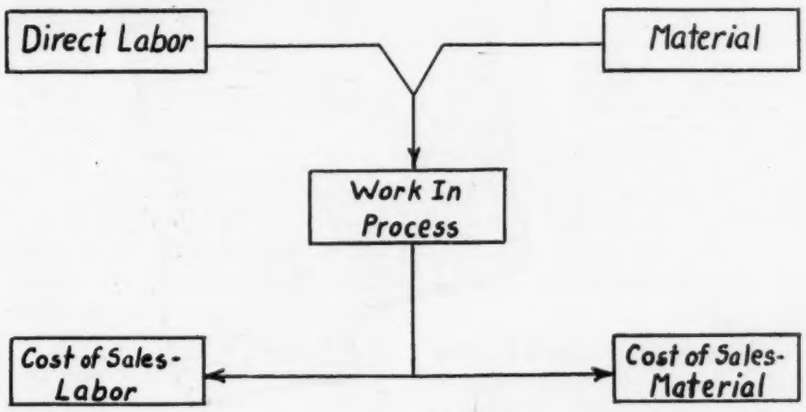
Double Entry

Now, to answer your inquiry, let me begin with the statement that Double Entry bookkeeping is really quite simple and not at all the complex and complicated thing most business men think it to be. As stated in one or more of the earlier articles, bookkeeping is merely a clear, concise and complete financial story of the business. You will readily admit that in your business, and all other business, you are constantly moving value from place to place, changing its form frequently,

but nevertheless, it is the moving of value. Each and every move of value affects a source and a disposition.

You will, perhaps, recall my rule—DEBIT THE DISPOSITION AND CREDIT THE SOURCE. These seven words tell the complete story of double entry bookkeeping, and for each and every business a chart of accounts must be planned to properly classify the business activities. Such a Chart of Accounts was included in the series of articles published by the Artisan.

The accounts shown in the Chart of Accounts were suitably named so as to indicate the character of financial data to be recorded in each account. If you will review the Chart of Accounts you will find it quite easy to determine whether the account will carry a debit balance or a credit balance. To illustrate, let's use the rule —DEBIT THE DISPOSITION AND CREDIT THE SOURCE.



Cash: This account will be debited with all cash received and will be credited with all money paid out or deposited in the bank. As cash is received, it must be placed in some account and the cash account is the proper one to be debited. The cash received has come from some source, say Accounts Receivable, and thus we determine the account to be credited. Thus, we debit Cash and credit Accounts Receivable to record the fact that a certain amount of cash has been collected from a customer and placed in the cash drawer.

Study the other accounts shown in the Chart of Accounts and you can easily determine the purpose for which they are to be used. Those accounts shown under the heading of assets will carry debit balances. Of course, when the bank account is overdrawn it will show a credit balance. If more has been checked out than was deposited, the account will show an overdraft. The accounts shown under the heading of Liabilities will show credit balances. These accounts are "Source" accounts more than they are "Disposition" accounts, hence carry credit balances. Expense accounts are debit accounts and Income accounts are credit accounts.

Now for a discussion of the "Work in Process" account. Its name clearly indicates its purpose—to record the money transactions pertaining to work in process of completion. In your shop, upon receiving an order to install a furnace, you proceed to assemble the material required for the job. You put this material in process of fabrication for the job. You actually take the sheet iron out of the racks and make your hot and cold air pipes, your furnace jacket and hood, you select the registers and other material required for the completion of the job and all along direct or productive labor is being put on this material. These two elements, material and direct labor, merge and form a salable job.

Material Tickets

In order that your books may properly record the actual shop operations material tickets and time cards are used on which to report to the office the moving of these values into production. Applying the rule, we debit the disposition—Work In Process—and credit Inventory—Materials, the source, with the value of the materials thus put in progress. Direct labor costs are likewise credited to Accrued Wages or Bank, and charged to Work in Process as the pay periods arrive. Of course, the material tickets and time cards show the order or job on which they are used, and these Cost Sheets, as a whole, should agree with the total shown as a balance in the Work in Process account.

The Debit Invoice

As jobs are finished and billed to the customer the invoice requires a debit to the customer with corresponding credits to Sales of Labor and Sales of Material. Then, from the Cost Ticket covering the cost of the job is determined the cost—charged into Work in Process as the work progressed. From this record we prepare an entry to move this cost from Work in Process to Cost of Sales—Labor and Cost of Sales—Material. The entry, then, is to debit Cost of Sales—Labor, and Cost of Sales—Material and credit Work in Process.

Of course, work is constantly being put in process and there are at all times a number of uncompleted jobs in process. This account, then, is the means of receiving, sorting and holding these costs until each separate job is completed. At the close of each month, after entering all material tickets and time cards, and also transferring all completed jobs to Cost of Sales—Labor and Cost of Sales—Material—the balance shown in Work in Process account should be exactly the total of the cost to that moment of all unfinished jobs in the shop. The routing of these activities may be charted about as follows.

Work In Process

As Direct Labor and Materials flow into process at a rate differing from the completion of the jobs, the two elements of prime cost are flowed into the Work in Process account, there to be held until completion of the jobs, when they are taken out of Work in Process and put in the Cost of Sales accounts. By this means a job that may be completed in one day and another job which may require three months are treated alike—the costs are flowed into the Work in Process as the work progresses and remains there until the job is completed and then the costs—in total—are transferred to the proper cost of sales accounts.

Do You Have Bookkeeping Problems? If So We Shall Be Glad to Have Them Answered If You Will Supply Full Information and Your Figures

"Fix Up the Basement"

An ingenious sales campaign which sold more than 100 blower and gas conversion jobs in the first six months of 1933

A NEW sales idea!

An idea which one contractor has used to hold and increase business month by month despite all inroads of the depression.

What is it?

Fixing up the basement.

How the idea was conceived, how it has been put into practice, what results have been secured are strikingly related in the words of one of the officers of the firm responsible for working out the details and aggressively selling the idea to the home owners of his community.

The firm responsible is the Banner Heating Company, Inc., "Specialists in Fine Residence Heating" and their operating area is the city of Youngstown, Ohio. R. C. Read, Secretary and Treasurer of the company, gives the story like this:

"For many years our firm did a large volume of new construction warm air furnace work. Around the end of 1931 we realized that we

INDICATOR, YOUNGSTOWN, OHIO, SUNDAY, FEBRU

Neglected Cellar Is Now Coming into Own in City

Is Being Turned from Domestic Dump to Show Room in Many Youngstown Homes

BY PAUL VAN AUKEN

The cellar—poor, neglected cellar—is at last coming into its own. The lowliest room in the house is fast becoming recognized as a real part of the home. In many Youngstown homes the cellar today is another living room, or recreation room, a part of the house which the housewife can now be proud to take her visiting friends from out-of-town through, whereas it used to be dismissed with a curt, "This door leads to the cellar."

It was with good reason that the latter was thus quickly and tactfully disposed of. It was—nothing to show visitors.

"Down in the cellar"—what did that used to mean? It meant this: "Put on your old clothes if you're going down in the cellar, and don't touch anything up."

The cellar was where the furnace reigned, and raised—dust, down on everything within 50 feet. Therefore, only those things were put down there which meant nothing to the housewife or women of the house whether they got dirty or not.

The cellar, at the bottom of the house, was a rubbish catcher—and trash pit—the place where all the dirty and junky things finally came to rest after drifting and seeping down from the floors above.

Boards and boxes, barrels and baskets, fruit jars, broken furniture and toys, tools and pipes and a thousand and one other things, those we what want into the cellar.

The attic was something like the cellar, only more quiet and restful. The attic was where the spare furniture and trunks and Grandma's patch-work quilts and Aunt-aunt's fancy shawls were kept. The attic was the place where things are preserved, not discarded.

No, those old attics, catacombs full of ancient trash, were certainly nothing to be proud of. They were the bane of a housewife's life. She was always removing, and even beginning to clean, but never getting through altogether. Her cellar, and could not look much worse. Old now look what has happened it. This erstwhile domestic dump is now the beauty spot, the showplace of many homes. It has been cleaned out, cleaned up, dressed down, decorated and furnished and as come out of the operating room is new.

Good examples of these refurnished lower rooms are to be found in the homes of many Youngstown people, including those of Don Mc-Vean, W. Florida Ave.; Carl Ullman, Windsor Rd.; Al Ameigh, 29 Hillcrest Ave.; Warren Williamson, 18 Warren Ave.; Ray Rose, 4419 Market St.; George Hemlax, 138 New York Ave.; Albert Shumley, 44 W. Judson; M. Gano, 521 Potomac; George Morrell, 523 Granada; Victor Blumeard, 84 Pleasant; Ed Turek, 836 W. LaClede; George Olas, Poland; Armstrong, 65 E. LaClede; William Armstrong, 65 E. LaClede; Dr. D. M. Rothrock, 330 Potomac; Dr. D. M. Roth, 948 W. Warren; Dr. James Fisher, vine Dr.; J. D. Roller, Ottawa Dr.; Jerg Walker, Irving Rd.; L. R. Brock, 811 Logan. Brook; and numerous others, including R. C. Read, 400 Howard St.

The cellar today is coming into its own as a recreational spot. Johnny builds his playhouse and sends his electric train humming over the railroad in the cellar. Mother finds it an ideal spot for her bridge club. Many have been made over to provide an open fireplace.

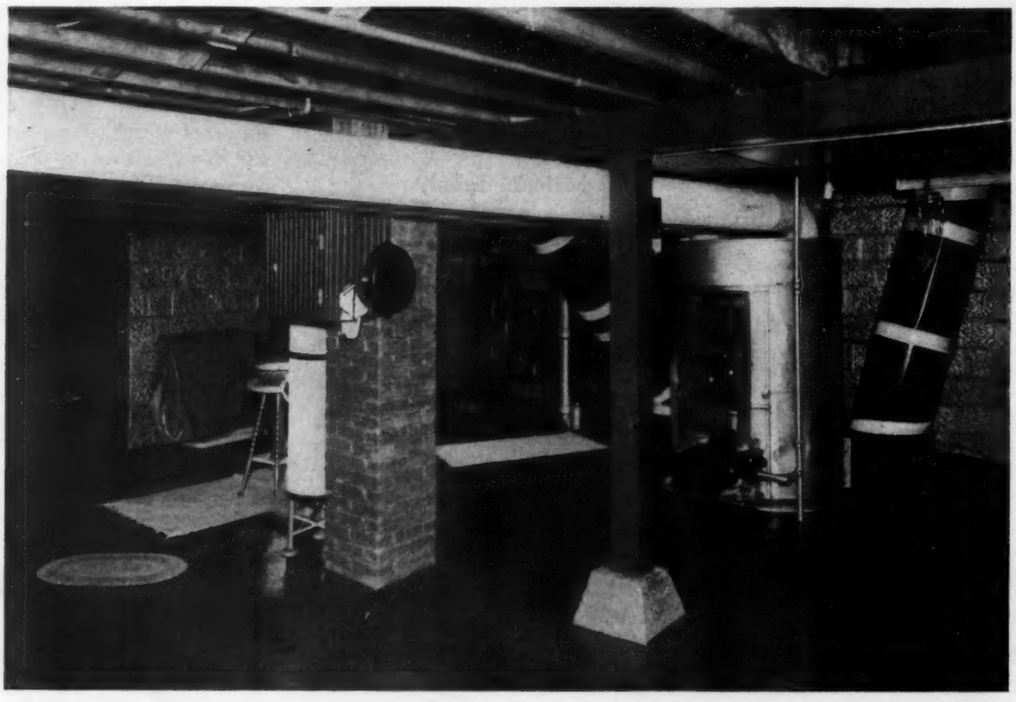
Art Displays

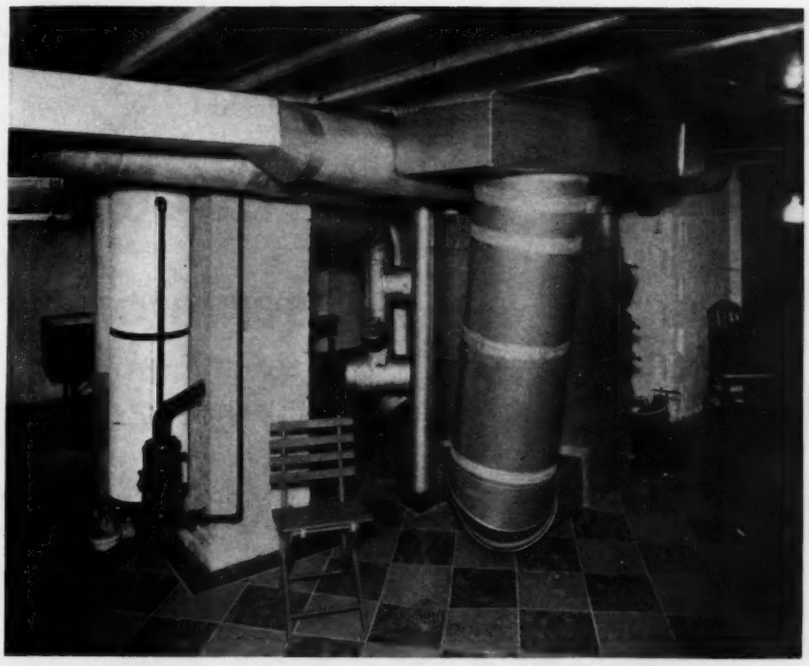
Some of these rooms are beautiful examples of the art of interior decoration. The possibilities of a cellar room seem to be limitless. Some rooms are different from ordinary rooms. The ceilings are lower, for one thing, and made of cross-beams which offer many possibilities for unique decoration.

The walls are different from ordinary walls, for another thing. They are always brick or tile, rough and irregular for papering. Decorative paint, while deeper and pictures can enhance the beauty of the room.

Of course, in the middle of all this must be the furnace, which would seem to hamper any operations. In some of the Youngstown cellar-rooms gas or oil is burned in the furnace. The large round pipes can be painted in silver, gold, or gold, thus reducing their unsightliness. If you use coal or coke, much improvement in cellar can be made with a brush

The unique idea of the Banner Heating Co. has received due recognition by the Youngstown press. Note the newspaper story. Below is a "fixed-up" basement in a five-room, two-story house, value $5,000. Owner did the job at a cost of $16.00.





By painting the casing and pipes, painting the floor and walls and putting in a conversion burner the owner of this eight-room house added another usable floor to his residence. How much would you guess this decorating added to the value of the house?

◆ ◆

must get something new going or we would pass entirely out of the heating picture in Youngstown. There was no new building going on and the prospects for new construction were slim indeed.

"Many plans were brought forth, many new ideas were looked into, but only one idea—"Fixing Up the Basement" seemed likely to enjoy popularity.

"We do not wish to claim that the adoption of this idea of fixing up basements has put us on the easy road to large profits. In fact we are plugging along month by month and are far from doing as well as we would like; but we have discovered a brand new field which has kept us in business despite the country's troubles. Furthermore, we really believe that any average first class dealer who is on his toes can discover this field and make it pay if he will only work intelligently.

"The mere finding of this idea was only the beginning of our development of the plan as a whole. Much thought and trial and error had to be carried on before we were sure we were on the right track and organized to make the most of the basic idea.

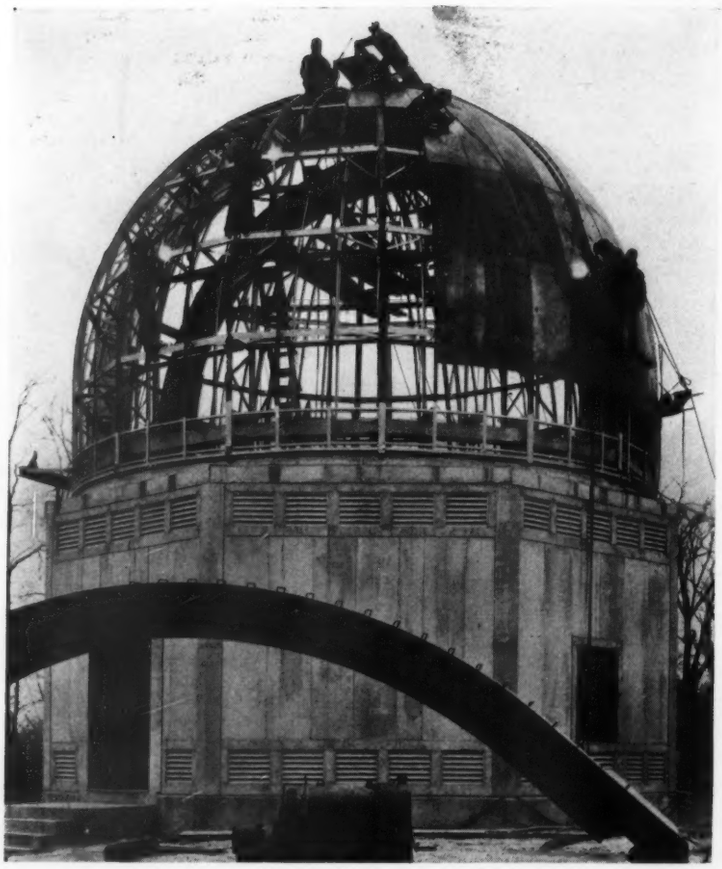
"In order to make the idea take hold we had to have something material to show the home owners we proposed to call upon. Naturally we thought first of our own show room. We fixed up our salesroom by having the walls and floor painted. Then we decorated a furnace in bright red with gold front. The casing and leader and return air pipes were all attached just as the installation would look in a basement. All the pipes were painted silver. Then we hooked up a blower with filters, automatic humidifier, room thermostat and furnace controls. When we got through our salesroom was transformed and we had a place we were thoroughly proud of.

"Then, we selected ten of our recent better furnace jobs in good homes and made personal calls on each owner. We suggested that they get a painter or buy some paint and make a recreation room out of the cellar. In nearly every case, the lady of the house is interested in having a nice laundry or a playroom for the children. We told her that if she would get the place fixed up we would put up wire clothes lines for her by stringing 2-inch harness rings on 1-inch pipe so that she could slide the lines over out of sight when the washing was over. Then we put a washday elbow with a damper on the furnace so as to give extra heat in the cellar.

(Continued on page 19)

◆ ◆

The "Fix Up Your Basement" idea appealed to the owner of this hot water heated house. A conversion burner, paint for the floor and walls, a partition for the bar room and the owner had a new basement at a total cost of about $75.00.



An All-Metal Observatory Fabricated By Welding

RAPIDLY nearing completion, two unique buildings in Washington, D. C. to be used to house new telescopes for the United States Naval Observatory are fabricated entirely of sheet metal applied by the electric arc to the structural frame.

These observatory structures, one 35 feet in height and 33 feet in diameter and the other 25 feet high and 22 feet in diameter, will be the homes of a 40-inch diameter and a 15-inch diameter telescope respectively.

In determining the type of construction to be used, it was decided that a welded design would provide several advantages not possible with other methods of fabrication. Due to the expansion and contraction of the dome plates caused by sun's rays, it was felt that rivets might give to such an extent to permit light and heat rays to enter and cause damage to the telescope mounted within. It was also believed that the precision mechanism of the $30,000 Naval Observatory Clock located 90 yards from the larger building might be injured by the vibration of riveting hammers. These reasons, plus the fact that welding offered a more rigid and more economical structure, led to the decision to use arc welding exclusively.

Since construction of both buildings is similar, the larger one will be described here. The base is made up of I-beams cut in half to form T-members with lattice work of angles welded to the webs of the T-members. The columns are anchored by means of 4-inch bolts embedded in concrete. Angles welded to the columns extend horizontally around the entire circumference of the building. For additional strengthening ¾ inch round rods run diagonally between columns.

On top of the columns, a circular structural table was built which forms the base for the rollers of the dome turn-table.

The exterior of the structure is covered with steel sheets welded in place. Ventilating louvres are provided as shown in the photograph. The inside of the building is covered with 20 gauge sheets welded to the structural members and leaving an air space between the outer and inner walls.

The lower section is composed of corrugated sheets with louvre sections above and below, broken at the corners by pilasters. The corrugated sheets were furnished as separate individual sheets placed in the plane surfaces, these plane surfaces being formed as a welded unit fabricated in the shop, this unit being fabricated by the Virginia Bridge and Iron Company.

All the sheet metal work as well as the sheet metal sections containing the corrugated louvres, was furnished by the Terker Iron Works of Brooklyn, New York, who furnished the entire sheet metal fabricated material.

The dome is built in the same manner as the base, using 8-inch I-beams cut in half to form T's on both the inside and the outside of the dome. These are bent to shape and the angle lattice work is welded to them to tie each section together. Angles, welded to the T's, extend horizontally around the dome.

Twenty gauge sheets are welded on both the inside and outside of the dome structural members leaving an ample air space for ventilation. The temperature of this air space is to be regulated by cooling

rans so that injurious heat rays will not enter.

An opening is left from the bottom of the dome to the top to allow the telescope to protrude and be elevated to the desired angle. This space will be covered by operating shutters which are seen in the foreground in the photograph. These shutters are formed of angle iron frames and are covered on two sides with ¼-inch vertical plates and on the bottom and top with 20-gauge steel sheets.

The two shutters which are shown in the foreground of the picture are fabricated of sheet metal on a structural steel frame and were put in place as two complete units. The structural frame which supports the shutter is erected and when welded is done as a structural member and not as an entire unit.

Field welding and erection was done by the J. K. Welding Company of New York City. Four gasoline engine driven welders manufactured by The Lincoln Electric Company of Cleveland were used on this job.

The general contract was held by The McHarg Company of New York City.

Structural shop fabrication was done by The Virginia Bridge and Iron Works.

Fix Up the Basement *(Continued from page 17)*

"We urged her to fix up a card room or Ping Pong space in the cellar.

"The approach that never fails is to say "Would you be interested in fixing up your basement as a recreation room as many others are doing?" The fact that we were not selling paint or cement, immediately appeals.

"Then we suggest a blower, a thermostat or a gas burner and keep stressing the cleanliness angle. Strange to say the man is generally the most interested in the colors, etc. before the job is finished.

"The prospects are easy to obtain as one woman tells another and each customer knows a friend who might be contacted. We have no high-pressure salesmen, but we have color cards, photos and all sorts of ideas for economically fixing up a cellar and we are really interested in making the home cleaner —a never failing angle.

"The least anyone will buy is a thermostat or an automatic humidifier.

"If dealers will check up on their net profit they will find, as we did, that there is more money in selling thermostats and blowers, etc., than in trying to put in furnaces for $100.00 each to beat the tinner in the next alley.

"We also send photo postcards of cellars to a selected list of prospects each month with the caption 'Does your cellar look like this?' We do no canvassing on this work, but use canvassers for furnace repairs in the cheaper territories and on housing projects.

"People are very much interested now in filters and we emphasize this until they are interested—then explain that the blower is really a necessary part of a filter system. The word blower to the average woman means nothing; cleanliness is the main thing to stress.

"The usual alibi, 'We have no money,' is easily licked by the fact that $15.00 worth of paint put on by the owner will add several hundred dollars to the value of his home and give him a clean, beautiful laundry or recreation room.

"We urge the women to come and see our decorated basements at our salesroom and tell her about Mrs. Jones and Mrs. Smith who have worked out an idea in 'log cabin' or 'night club' style. Many of our jobs are very elaborate in decorations but we purposely refrain from opening any discussion with such basements because price sometimes scares owners off.

"Even if the furnace job is O. K. we urge the owner to decorate. Then his neighbors become prospects and we create new friends for ourselves all over the section.

"We do no decorating except the furnace and pipes and get a flat price from a painter of $5.00 for that. From there on the customer is the doctor. However, we can recommend reliable decorators or handymen if they prefer who will give them an estimate.

"If the coal bin is an eyesore, we recommend buying a gas or oil burner and tearing out the bin.

"Some owners put beaver board over the joists and some spray the joists with aluminum. Some at our suggestion insulate the attic with mineral wool and save 25 per cent of their fuel and have a cooler home in summer, too, and so on.

"We believe that only 10 per cent of any really selected prospect list will fail to buy something within one year of the first call.

"Our gas burner jobs average $250.00 apiece in a territory where the gas companies formerly begged the folks to purchase for $85.00 or $95.00 and sold so few that they quit in disgust.

"Our warm air jobs even in times like these will run from $250.00 to $500.00 and $600.00 and to middle class people almost entirely.

"Few people in our area buy conditioned air jobs because few of us are good enough salesmen yet to successfully sell against the $1500.00 or $2000.00 a real job should bring. We don't call a cellar stub job with a desk fan a conditioned air unit and unless dealers refrain from doing so the real conditioned air outfit will never get going.

"The more than one hundred gas burner and blower jobs we sold in the first seven months of 1933, were all gotten with the decorated cellar story and by stressing the cleanliness."

Repair, Replace, Remodel— Now Is The Time To Sell Fans

WHEN we think about repair, replacement and remodeling work it seems natural to divide our thinking along two general lines—replacement and repair to give a system practically identical with the existing plant; and real remodeling to modernize the system and incorporate present day equipment.

In this second classification—where we plan to modernize the plant—we usually begin by planning a forced air system. We do this almost without thinking because we know that forced air is the basis for all modernization and because we realize that use of forced air makes possible additional betterments such as cleaning, washing, positive circulation, basement remodeling; all of which can be included in the initial order or sold step by step as owner finances permit.

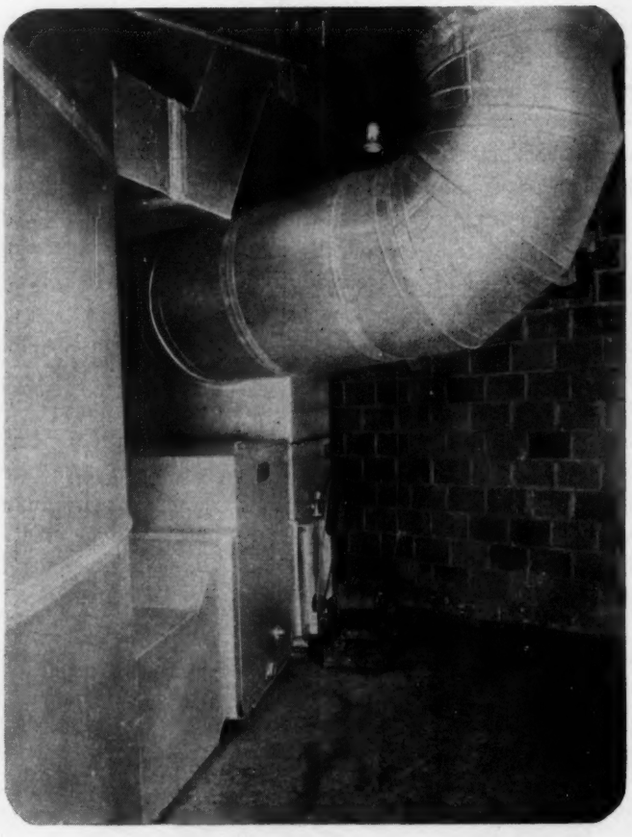
The Sales Talk

To succeed in any program of selling remodeling it becomes necessary, usually, to have a more or less standardized presentation in order that the important facts will not be omitted and to save time in getting the prospect's attention. And because we think of forced air as the basis for air conditioning and remodeling, it naturally follows that most sales talks begin with a discussion of the advantages of forced air and from this basis proceed step by step through the sales talk.

Contractors who have been selling remodeling and forced air tell us that they have found it necessary to develop a sales talk which begins by catching the owner's attention. To get this quick attention the opening part of the presentation must contain striking and emphatic statements which attract the prospect's mind and make further conversation possible.

These same old timers also say that it makes little difference whether the first presentation is by letter, advertisement or personal contact, the same attention-getting methods are necessary.

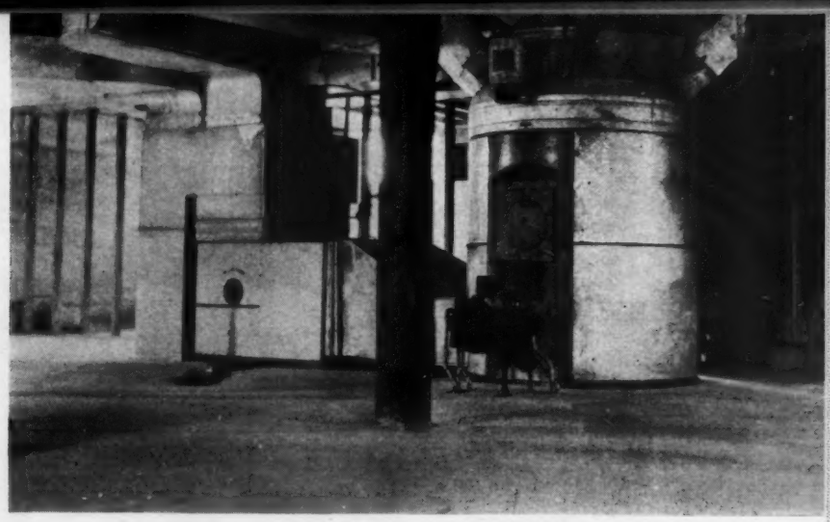
It may be interesting to know what is the fastest working appeal for forced air. From contact with contractors we should say that it is the appeal of overcoming such unsatisfactory conditions as cold rooms, ironing out temperature differences between rooms or in parts of one room, supplying heat to remote rooms, eliminating floor drafts and "cold

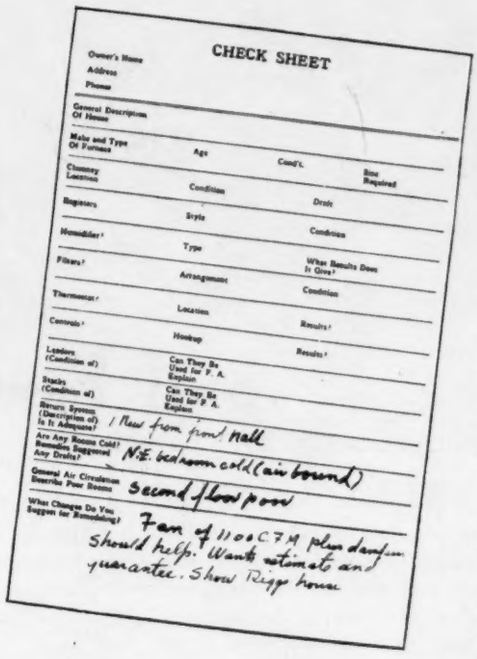


The contractor on the remodeling at the top of the page painted the old casing and leaders, added two cold air runs, but of most importance he sold a blower, which made possible the other work.

The furnace to the right has a new duct system, old returns, a new blower and a washer.

Check Fans!





CHECK SHEET

Owner's Name
Address
Phone

General Description Of House

Make and Type Of Furnace — Age — Cond'n. — Size Required

Chimney Location — Condition — Draft

Registers — Style — Condition

Humidifier — Type — What Results Does It Give?

Filters — Arrangement — Condition

Thermostat — Location — Results

Controls — Hookup — Results

Ladders (Condition of) — Can They Be Used for F. A. Explain

Stairs (Condition of) — Can They Be Used for F. A. Explain

Return System (Description of) Is It Adequate? — 1 Reg from front hall

Are Any Rooms Cold? Remedies Suggested Any Drafts? — N.E. bedroom cold (air bound)

General Air Circulation Describe Poor Rooms — Second floor poor

What Changes Do You Suggest for Remodeling? — Fan of 1100 C.F.M. plus damper. Should help. Want estimate and guarantee. Show Riggs house

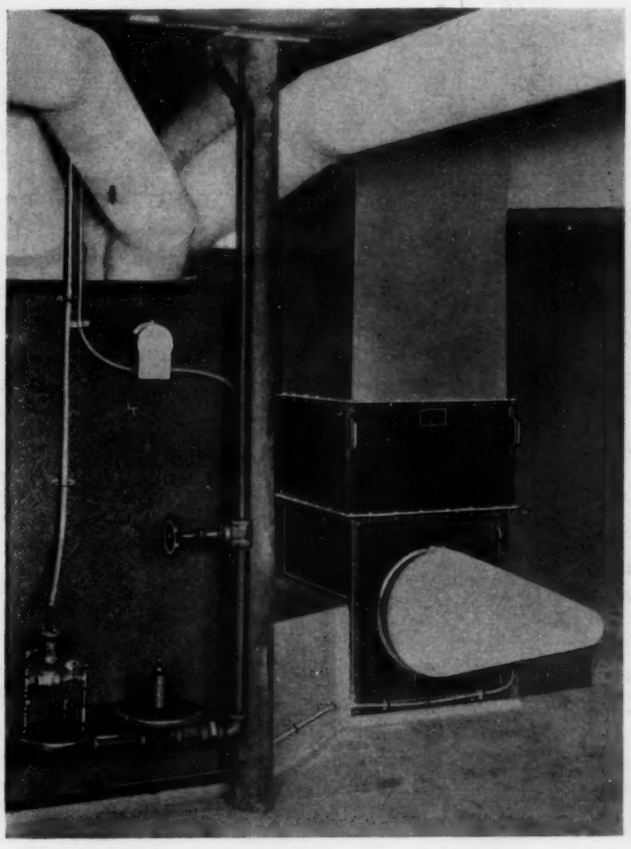
spots"—in short, giving the owner the kind of heating he *thought* he was buying.

Lack of uniformity in temperature throughout a house is probably as common a trouble as we find today. Some of this trouble may be traced to design recommendations of the past in which owners were sold on having bedrooms colder than living quarters. With the advent of forced air and air conditioning, most owners want comfortable temperatures in bedrooms plus a system which will quickly bring temperatures up in the morning or at any time during the day. Rooms heated by the old method are difficult to heat to this newer standard without overrunning the temperatures of other rooms. With a fan and proper balance such temperature differences can be overcome and temperatures made uniform throughout the house.

In years gone by when gravity was the accepted form of heating, the wise contractor usually explained that wind velocity and direction affected the heat distribution and some rooms would be chilly when the wind was high and blowing against these rooms. Today, with fan systems, it is possible to overcome this trouble and in installations where this fault is cited by the owner the ability of a forced system to remove this fault makes a strong selling point.

In any community there are dozens or hundreds of homes of the bungalow type where some rooms are located at some distance from the centrally placed furnace. Under some conditions such remote rooms are cold and no amount of firing will bring the temperature of remote rooms up to a comfortable degree without overheating close-in rooms. This problem, which is almost exactly as common as the ratio of bungalows to other types of houses, provides an excellent working field for the merchandiser of forced air because with his fan system remote rooms present little difficulty.

One of the commonest problems is floor draft and cold spots. How many times have you heard a customer say he can't use a certain spot in his house because the draft sweeps across this area? This type of draft is due to two general causes — differences in



The furnace above in a contractors home is used to show what automatic heat, a fan and washer, rectangular piping will do for an existing system.

The fan is the heart of most remodeling jobs because the fan makes possible many additional improvements. To the left a blower has been applied to a gravity gas furnace.

temperature and pressure between rooms or parts of a room and movement of air from the area of high pressure to the low pressure area around the principal return.

The simple application of a fan will not cure this common failing; and elimination of draft will always remain an insidious problem requiring careful analysis and thorough understanding of what goes on when the furnace is operating. However, with a fan system pressure can be maintained in all rooms and with careful location of returns and registers the movement of air can be controlled. When sales ability is coupled with sound engineering the "drafty house" becomes a favorable source of sale for fans.

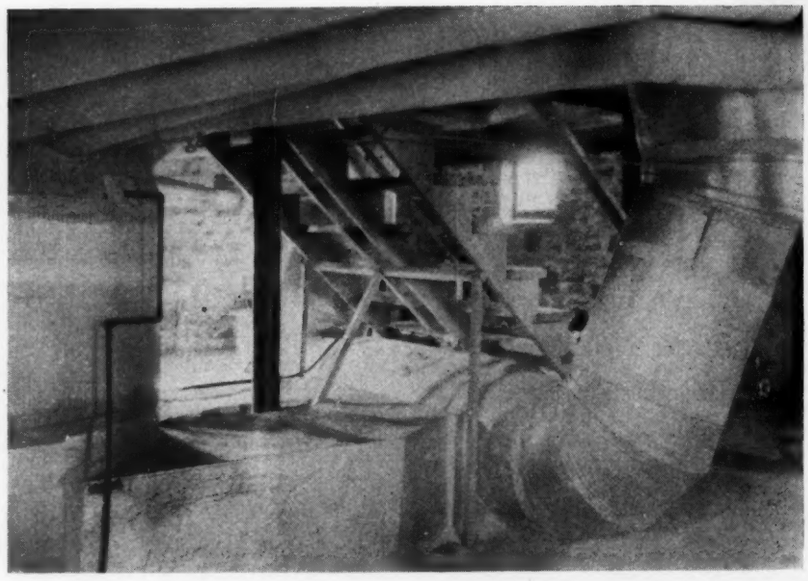
It should be obvious that guaranteeing such results without knowing how to engineer the change is very much like telling Einstein you understand his theory. You may be tripped up.

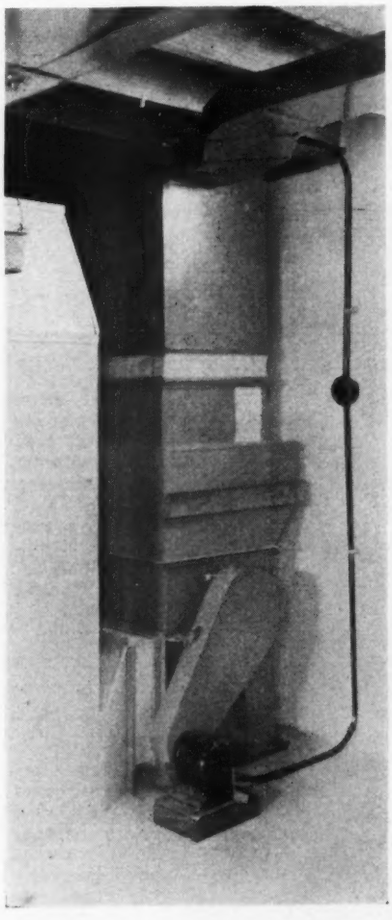
Air Conditioning

Second in value, is the appeal of air conditioning. Contractors say that while air conditioning is a good appeal they find many prospects thinking of air conditioning in terms of summer cooling and that the real sales problem is to explain that air conditioning is just as much a winter problem as a summer one. They begin by pointing out how much more important good air is in the six to eight months of winter when folks stay indoors than it is in summer when people are out of doors.

Air conditioning for winter comprises these functions—cleaning, circulating, humidifying, heating. Of the four, heating is easiest to give and in remodeling the problem is mostly that of convincing the owner that controlled heat is necessary, this to be secured by a control system.

Cleaning means filters or a washer or both, coordinated with the fan to remove the dust and dirt several times an hour from air picked up in all rooms of the house. Due to constant publicity home owners are beginning to understand and appreciate the value of cleaning and contractors are finding prospects receptive to the idea of including some form of cleaning with the remodeling work.





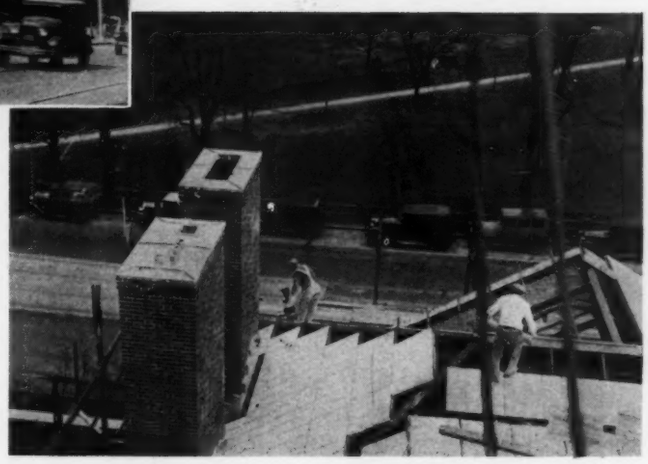
The ingenious contractor recognizes no obstacle. See the installation above. Below an all-rectangular job made possible with the blower.

Humidity is a touchy subject. We as an industry do a lot of talking about it and numerous manufacturers are shouting about humidity obtained with their gadget which stands on a table or looks like a lamp and will humidify one room or a half dozen on a consumption of a quart or so of water every twenty-four hours.

The remodeling contractor should be in a position to explain clearly how humidity is obtained, how much water is actually required for any size house, how important circulation of air is in humidity distribution, how house construction determines how much humidity can be carried without frosting and how adeguate humidity requires real equipment and not gadgets. Trained arrows in sales literature can never replace fan circulation in getting humidified air into every corner of the house—hence the need for a fan.

These, then, are the reasons why fans are important and why the contractor trying to capture his share of the remodeling work of his community will devote a large part of his sales effort to getting the prospect fan "conscious".

Chimney Caps Formed By Lead Burning

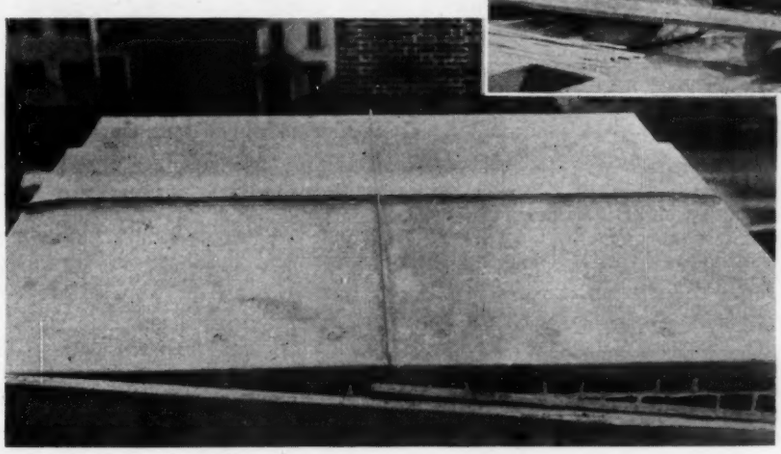


THE recently completed science laboratory at Radcliffe College, Cambridge, Mass., presents an interesting sheet metal installation. Much distilled water is required in the laboratory work and the simplest method of obtaining it is to catch rain water. For this purpose a number of false chimneys were provided on the roof of the building and covered with antimonial sheet lead having openings to admit rain water.

Lead was selected because of its resistance to corrosion, because its color would improve rather than detract from the appearance, and because it would not stain the adjacent masonry. The lead sheets used were 3/32 of an inch thick (6 lb. lead) and contained 3 per cent of antimony.

The lead chimney covers are laid over a concrete foundation and turned down 2 inches all around the outside of the chimney. Standard locked standing seams 1 inch high are provided in two directions to take care of expansion and contraction. Around the edges of the chimney inserts were built in when the chimney was poured. To these the lead was fastened by means of rust-proofed bolts and the bolt heads covered by lead burning small pieces of lead over them.

Different numbers of openings were provided in the tops of the false chimneys and the lead covers turned down 4 inches inside each opening. Rain water falls through the openings in the chimneys and is caught in 36 separate lead pans which are set on concrete bases at the bottom of the chimneys. These pans are 14 by 12 inches and are made of the same 3 per cent antimonial lead as the chimney covers. They are 8 inches deep. Corners are made by butting the lead and burning.



Then 36 lead catch boxes or derbies 6 inches deep and 4 inches in diameter were made up, each with a 1-inch flange turned to hold a companion flange to the one in the concrete. These flanges were bolted together to hold the lead derbies in place. This arrangement makes it possible to remove the catch boxes or debies in case leaves or birds fall down the chimney openings.

When a furnace is being installed the member contractor places this "bonded-seal" sign where neighbors can see it.

Dealers of Northern California Association Sell "Bonded Heating"

By Mary Gleeson

INTELLIGENT co-operation is enabling furnace dealers in Oakland and Berkeley, Calif., to sell more and better installations and to demand and maintain unusually high standards for their entire industry in the fast-growing East Bay district. That has been brought about by the establishment of their successful organization, the Furnace Dealers Association of Northern California, Inc., now in its sixth year.

This association is an outgrowth of the extremely chaotic conditions existing in Oakland and Berkeley back in the year 1926. Dealers were competing with one another in an active price war without regard to costs or any standards of installation. Price was about the only sales talk used with the customer in the sale of warm air heating equipment. A prospective buyer of a heating plant in many instances became bewildered in the variance of specifications, equipment and prices asked. Real salesmanship was cast aside. Dealers condemned each other and resorted to all sorts of unethical tactics to beat competition on price.

Dealers Get Together

Finally, several of the foremost dealers in the district woke up to the fact that if they were to keep the sheriff away and continue in business, something would have to be done to change and better conditions. With this thought in mind, these dealers met and laid all their cards on the table, face up. Cost sheets were brought to meetings and checked, with the result that they found that not only had they been losing money on most of the installations, but in trying to meet extreme price competition they had created a market for cheap, inferior and inadequate heating equipment which was further creating much dissatisfaction among users.

Common sense prevailed at these meetings and the Furnace Dealers Association of Northern California then came into existence for the purpose of raising the warm air heating business to the high standards which are now recognized

throughout the East Bay region of San Francisco Bay and which are rapidly being adopted in many of the other sections of the northern part of California.

When the organization of the association was completed, the board of directors employed a secretary-manager who is a heating engineer, and a central business office was opened as headquarters. Standard specifications for installations have been adopted and each member deposits a cash bond of $100 to guarantee that installations made by the member complies in all respects to the specifications and regulations set forth by the association. When an installation is completed the secretary-manager is notified by the member to inspect it, and when found to comply with all require-

Right is a typical newspaper advertisement which points out just why buyers should patronize an association member in order to get "bonded" heating

Is your home PROTECTED
WITH THIS SEAL?
BONDED HEATING
No Matter How Large or Small Your Home May Be, You Should Install Your Heating Under the 'Bonded Seal'
BONDED HEATING COSTS NO MORE—when correct, safe and economical heating is desired. Bonded Heating protects the buyer from being sold obsolete, inefficient and uneconomical heating equipment. Bonded Heating dealers sell only modern, approved heating appliances and guarantee, under cash bond, that your installation will be properly made with the best quality materials and by first-class mechanics
See the latest in good heating equipment for Natural Gas
—equipment that is made for long years of efficient and clean heating. Heat by pushing a button or turning a valve—that's Convenience. Let your family remain at home with this assurance of healthful warmth.
Furnace Dealers' Association of Northern California, Inc.
HARRY O. LOTHROP—Secretary and Manager

Check these FACTS
before purchasing
heating equipment
FIRST—GOOD HEATING cannot be bought "OVER THE COUNTER." Every heating installation presents a different and varied problem.
SECOND—GOOD HEATING cannot be bought ON PRICE ALONE. An installation should be first planned, then the proper equipment selected and the cost estimated accordingly.
THIRD—GOOD HEATING is an engineering problem that should be worked out by a concern that is expert in the heating trade. Whether the installation is for a single room or the largest building, time, trouble and expense are saved by consulting a reputable heating concern before the order is placed
"Bonded Heating" IS THE SAFE-SURE-WAY TO CORRECT HEATING
BONDED HEATING
DEMAND THIS SEAL
Clean, carefree heating from good gas equipment properly installed
THE LATEST Natural Gas appliances
ARE NOW BEING DISPLAYED BY THE FOLLOWING "Bonded Heating" dealers

Left is another newspaper advertisement which explains how the association's "Bonded Seal" insures protection against poor design, skimped installation, worthless guarantees

J. L. D. Keppy, Chairman of the Board of Directors of the Association, believes that the success of the heating dealer depends on his ability to sell the customer the right equipment at a fair price, a program fostered by the association's policy of "bonded" heating installations

ments he is authorized to place the association seal of guarantee on it.

Within two years after its organization the association was successful in having city ordinances passed and adopted in the cities of Oakland and Berkeley covering the installation of warm air heating equipment and gas burning appliances. These ordinances call for the licensing of all dealers and city inspection of every installation. The results of these ordinances proved of untold value when natural gas was brought into the San Francisco Bay area in 1930, for without them an inferior class of gas heating installation would have been sold, to the detriment of the gas industry and the heating business. Instead, however, it is found that the public is now demanding better equipment and correct installations. The number of warm air heating installations using natural gas have increased tremendously during the past year.

Installations made by association members are made under the association's "Bonded Heating Seal," which guarantees the buyer first-class approved heating equipment, correctly installed. The association and the Pacific Gas & Electric Co. during the past two years have worked together in the promotion of correct heating to a considerable extent through co-operative advertising and first-class service. Dealer members carry the association seal on their letter heads, on their delivery equipment, and place a "bonded heating" seal poster on the exterior of a home where an installation is being made.

Harry O. Lothrop, Secretary-Manager of the Furnace Dealers Association of Northern California, an experienced heating engineer inspects all installations made by dealer members before the association's seal is placed on the job

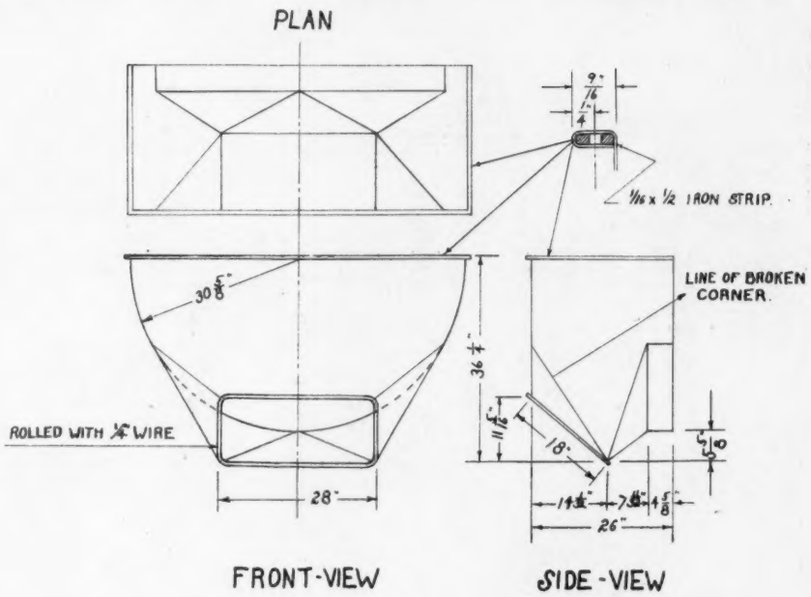
Can You Improve This Hopper Pattern?

A READER in Chicago submits the sketches for the hopper shown. He was called upon to make this hopper and found he was up against quite a problem in laying out the proper patterns. After several trials in which one part or another had to be snipped to fit, he developed patterns which give a good fitting hopper.

One of the restrictions is that the unit be made in only four pieces and another is that all joints be double seamed.

The reader would like to see any patterns you think will make the cutting easier and quicker.

Have you any suggestions?



Air Conditioning Section

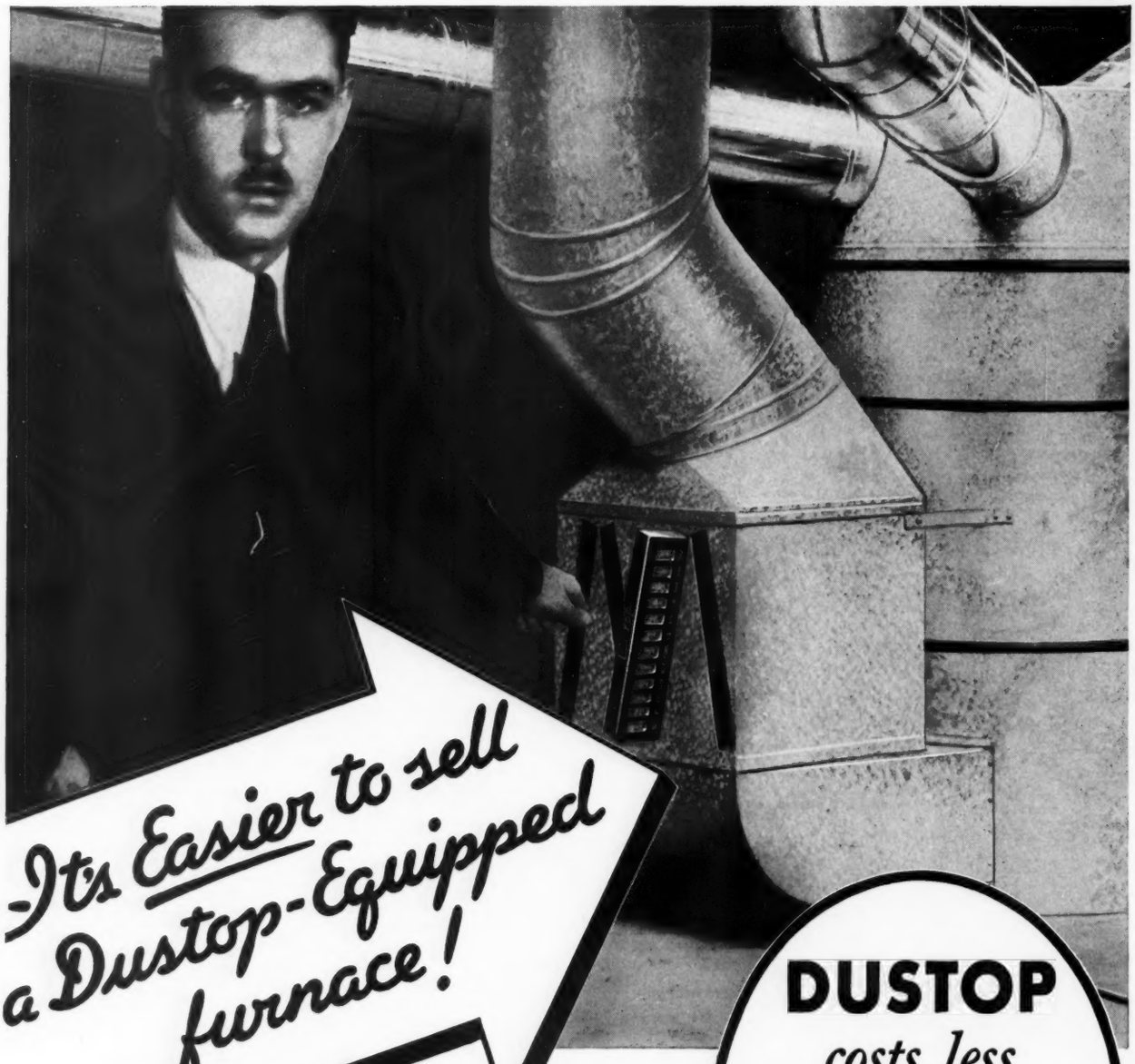
Devoted to the technical and merchandising problems of air conditioning in homes and small buildings

- - - - WE firmly believe that one of our duties as a business paper portraying trends and focusing thought on worthwhile developments is to take an active part in investigating developments and wherever possible try out and test those ideas which seem valuable.

- - - - We have backed up this belief by establishing a number of test installations under the guidance of qualified engineers and have made it possible for these engineers to find out exactly what these new ideas have to offer.

- - - - One of the most interesting installations under test is the three-flat building Platte Overton tells about in this month's Air Conditioning Section.

- - - - The system installed has some unique features—octagonal casing, very tight; high main and branch velocities; small round pipe leaders; gravity flow through fan, furnace and leaders; plus the whole general design.



It's Easier to sell a Dustop-Equipped furnace!

DUSTOP *costs less*

Very low cost filters are now available for gravity warm air furnaces permitting the circulation of clean filtered air. Two filter boots, including original Dustop filters, can be installed in the return ducts and can be sold at from $15 to $30. Dustop filters are renewable once every second or third heating season and cost $9 to $12 per change to the home owner.

● Not just heat, but *clean heat* is what you offer customers in furnaces equipped with Dustop Air Filters. That's your opening gun that sets prospects thinking . . . wondering . . . wanting! Then SHOW them—how effectively the densely matted Dustop fibers with their special adhesive coating form a highly efficient barrier to all manner of dust, dirt and germs which otherwise would be circulated—how easily the light flexible filters can be pulled from their frames and disposed of when loaded, and are replaced with new units—how Dustop provides dust-clean air, with all its advantages and luxury, at *low first cost* and *low operation cost.*

Sell furnaces the *easy* way—equipped with Dustop filters—and you give customers what they want, build repeat business, repeat profits. Boots can be made up by you from drawings which we will supply, or may be purchased from furnace fitting manufacturers. Write for information. Owens-Illinois Glass Company, Industrial Materials Division, Toledo, Ohio. (Dustop is assembled and installed in Canada by General Steel Wares, Ltd., Toronto.)

OWENS-ILLINOIS

DUSTOP AIR FILTERS

Automatic Controls

This third control system, wherein the room thermostat is the master control, is a system much favored by both contractors and manufacturers because it gives excellent uniformity of room temperature, is responsive yet economical, and requires a minimum of installation and maintenance. This article brings to a close the discussion of this hookup.

WE discussed in last month's article on this third control system the general set-up of the system, the problems in selecting settings for the fan and limit controls, looked into the operating cycles and gave some consideration to the effect of furnace behavior on settings and general operation of the system.

Furnace construction and type also plays a part in the selection of the limit and fan control settings in this control system. For example, if the heater is a heavy cast furnace, some means of controlling residue heat must be devised. In other words, with heavy furnaces the limit control must be so set that it checks the fire before the room thermostat is satisfied. If it is so set the fire will be decelerating when the room thermostat is satisfied and the system shuts down.

If, on the other hand, a steel furnace is used, so that there is a minimum of metal to store heat, checking the fire will be followed immediately by a steady decrease in bonnet temperature so the limit control will usually be set slightly higher on the "high" setting.

In both cases some experimentation should be expected, as no one set of settings will work on all types of furnaces or in all kinds of houses. The smart contractor will study his equipment and the house and establish preliminary settings according to type. These first settings will be changed little by little until the best all around performance is attained.

The Fan Setting

There is little reason for detailed consideration in this article of proper setting for the fan control, since the same principles of selecting settings discussed in the August and September issues apply equally well in this system.

The principal factor to be considered is to keep the fan settings as low as possible without blowing cold air into the rooms. Be sure to allow for duct temperature drop and to use a differential as close as possible while maintaining constant fan operation once the fan starts.

One important thing to consider in the operation of this system can best be explained by citing a typical operating cycle. Let us suppose that the room thermostat is set to shut down the system at 72 degrees and start the system at 70 degrees. Also let us assume that our "high" limit is set at 160 degrees and our "low" limit at 130. Also that our fan "on" is 140 degrees and fan "off" at 125 degrees.

Our thermostat calls for heat during severe weather and we find the bonnet temperature at 140 degrees. The fan starts immediately and the bonnet temperature begins to drop. If the bonnet temperature reaches 130 degrees, the draft opens and the fire begins to accelerate. It is possible with this system to have the fan withdraw air a little faster than the fire produces heat, especially if the fire does not respond at once, so our bonnet temperature continues to drop until the fan "off," or 125 degrees, is reached, when the fan stops.

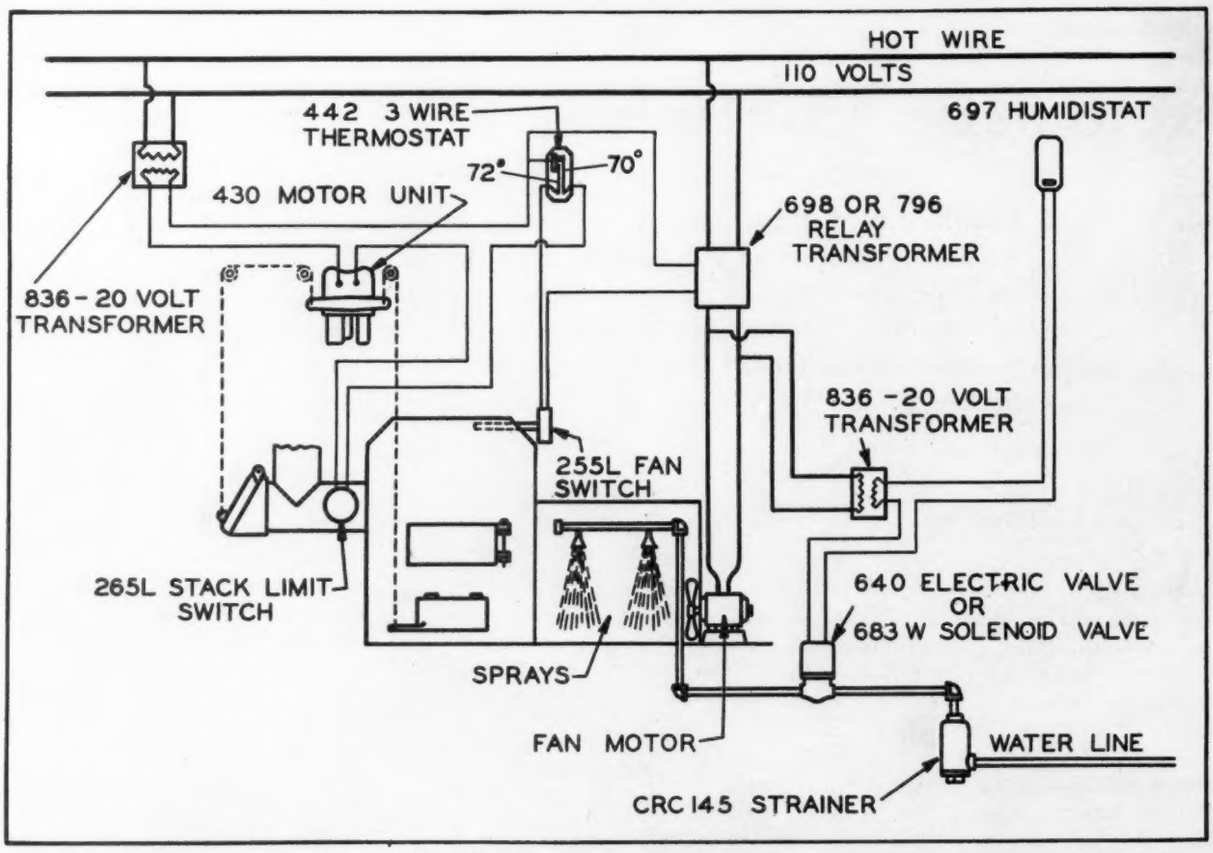
If the room thermostat is then satisfied the draft closes and the fan stops. If the room thermostat is not satisfied, the fan stops, but the draft remains open until the fan "on" is reached and the fan starts; the draft remaining open or until the limit "high" is reached and the draft closes.

This example is cited to show that in this hookup where the room thermostat is the master control it is possible for the fire to be checked at the bonnet "low" temperature, whereas in the previous system the fire was always checked at the limit "high." And also in this system the fan stops when the room thermostat is satisfied, regardless of bonnet temperatures.

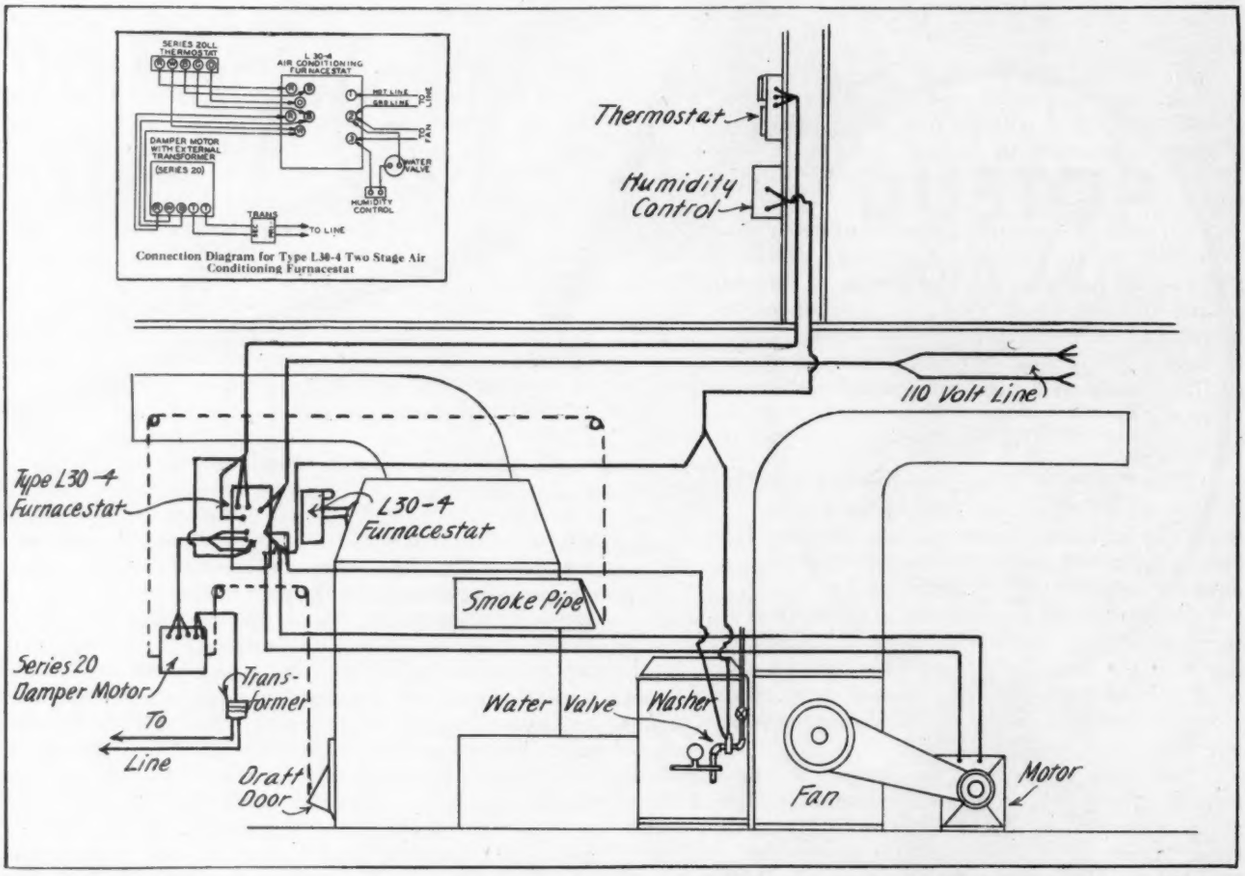
It is important to remember this, because if we use very high limit settings and a wide limit differential the bonnet temperature may seldom or never reach the settinge we have chosen and our settings are useless.

Some Variations

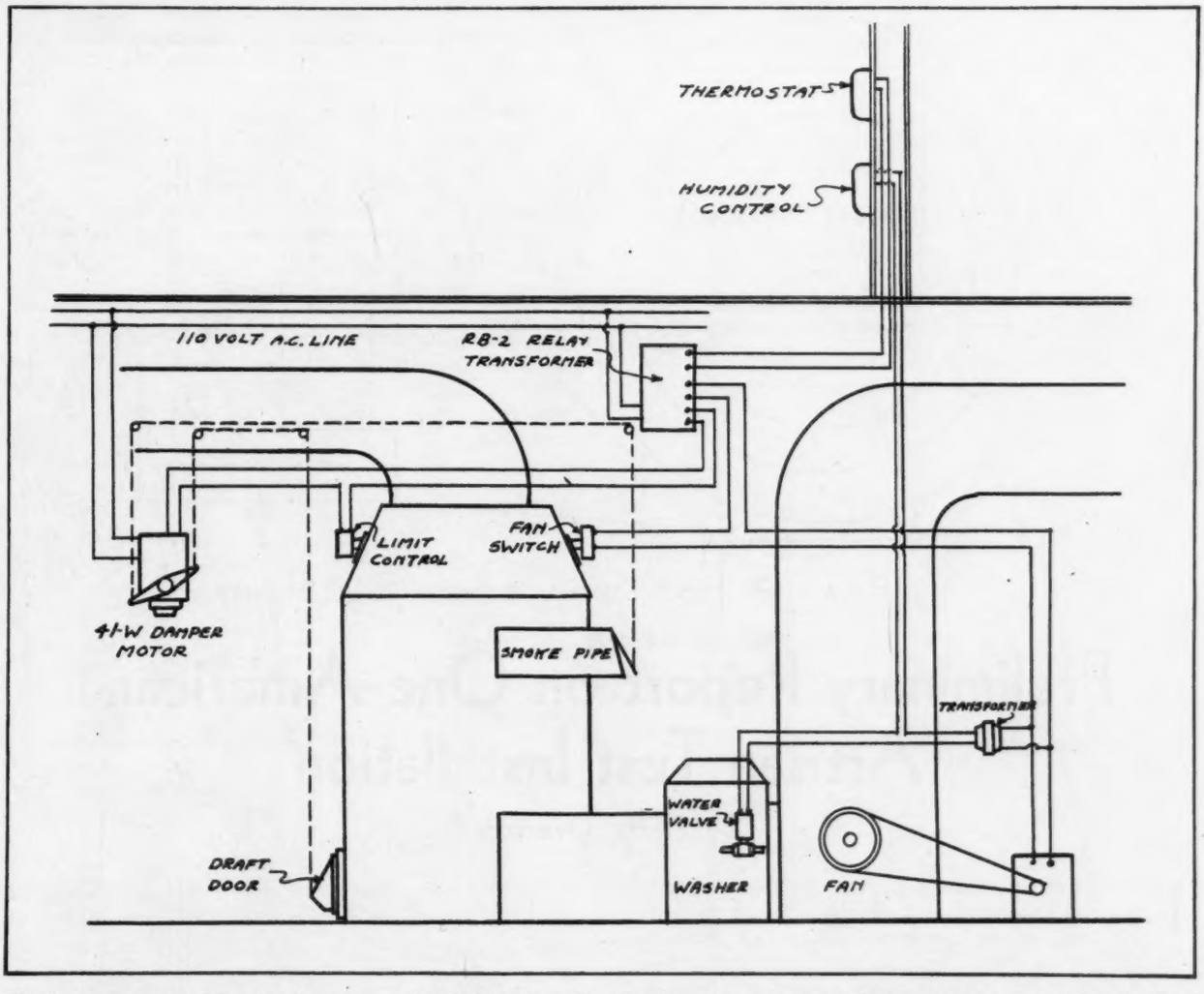
This control system with minor variations and several different types of equipment has proved popular with contractors and manufacturers. One of the interesting hookups, and one which has proved excellent in actual operation, uses a two-bladed thermostat which controls the drafts and fan operation from the room temperature. The fan operation is further supplemented with a blower or furnace switch in the casing and the drafts are controlled by a limit switch preferably in the stack. The cycle of operation is as follows: On increasing temperature with the thermostat set at 70 degrees, when the room temperature reaches 70 degrees the dampers are closed by the thermostat unless in the meantime the limit control has closed them. The fan continues to run until the room temperature reaches 72 degrees when the thermo-



Above is a wiring diagram with Detroit Lubricator Co., controls. The room thermostat has two blades set 2 degrees apart. The high blade operates the fan; the low blade operates the damper motor. The limit control is in the stack where a true record of fire condition is found. Low fan setting, correct and low limit setting are suggested as explained in the text.



In the above diagram, using Minneapolis-Honeywell instruments, a special furnacestat which includes fan, limit and safety controls with a wide range for each is used. In operation, the room thermostat is the master control and when it is satisfied the whole system shuts down. The fan can run without the draft opening if bonnet air is up to the fan setting.



The instruments used in this diagram are by H. M. Sheer Co. In the system the room thermostat operates a pilot circuit of the relay which, in turn, makes and breaks the circuit to fan control and damper motor. The limit control is wired into the relay-damper motor circuit and establishes the temperature zone for the draft operation. Low fan and limit control settings are recommended.

stat shuts off the fan or until the air temperature is lowered to the point where the fan switch shuts down the fan. In operating ordinarily the thermostat shuts off the fan before the bonnet of the furnace cools.

Fan Operation

When the room temperature starts to decrease the fan is turned on and if the bonnet temperature is sufficiently high the fan runs. If there is sufficient heat in the furnace to bring the room temperature up to 72 degrees the thermostat shuts off the fan. If there is not sufficient heat in the furnace and the room temperature decreases to 70 degrees the dampers are opened. It has been observed that in most cases the fan will operate several times on decreasing temperature without opening the dampers. If the thermostat is sensitive, we get frequent operation of the fan and thus preventing stratification.

The claims advanced for the system are: Even temperature control and economical combustion is secured. Lag and carry-over in room temperature are reduced to a minimum. Operating a fan at a temperature slightly above the operation of the damper motors evacuates heat in the bonnet of the furnace after the dampers are closed.

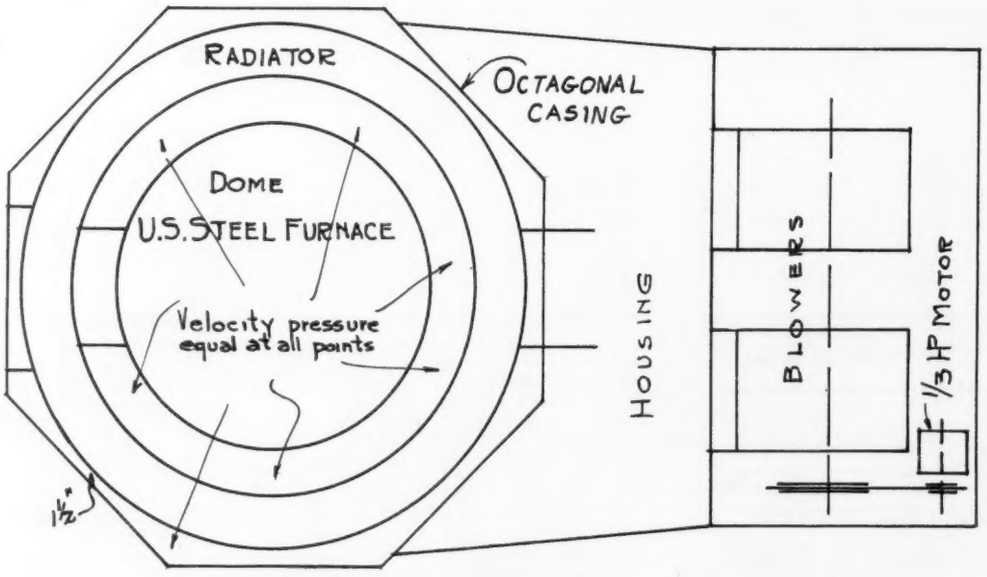
Stack Limit Control

A variation of this third control has been worked out by engineers and contractors who place the limit control in the stack. The reason behind the selection of this location is that when placed in the stack the control is affected by direct fire action and, therefore, more directly reflects the activity of the fire.

Bonnet temperatures, say the proponents of stack location, are not always indicative of fire condition, and a fire can reach a runaway condition despite the bonnet limit control. An example would be during a morning pickup period when the draft is open for a long, continuous interval. During this period the fan is running steadily and if fan is a little oversized, the fire gets a tremendous start by the time the room thermostat is satisfied or the limit control reaches the "high" and shuts the draft.

Limit controls located in the stock can be set

(*Continued on page* 35)



PLAN OF TEST FURNACE WITH TWIN BLOWERS

Preliminary Report on One American Artisan Test Installation

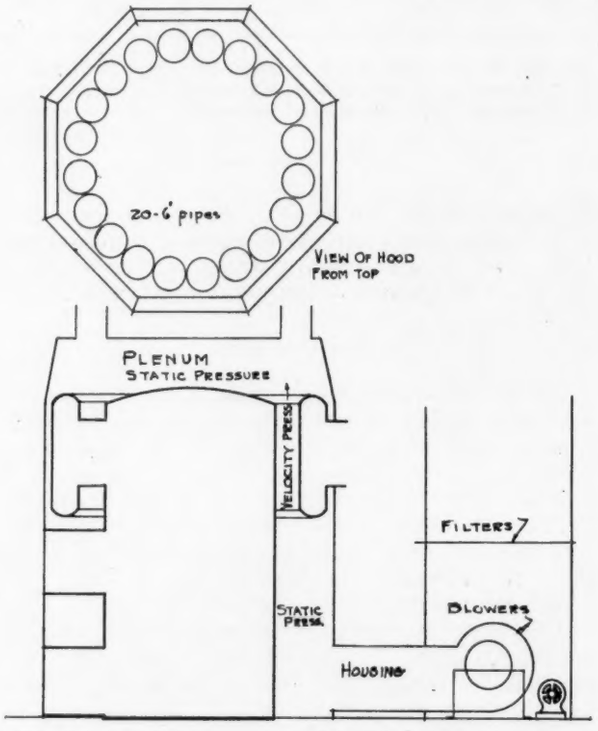
By Platte Overton

THE interest aroused by the article "A Packaged Air Conditioner" in the August issue of this magazine has prompted AMERICAN ARTISAN to further investigation on this type of system. Two items that were not covered in the former article were: how large a building such a system would be practical for, and how the old registers, stacks and returns would be utilized?

With this and other data yet to be obtained, a test system was installed as shown on the accompanying floor plans. Some of the items that will be studied and observed in the next 60 days are: Type of heater; air passage area in casings; shape of casings; controls and the effect of various locations of the thermostat; operation of limit control and fan switch; humidity supply and its control. The findings will be published in one of the first issues of the AMERICAN ARTISAN for 1934.

A glance at the floor plans will give the reader some idea of the size of the building. There are two floors with a ground floor or basement flat. There are 19 rooms in all to be heated. The owner has asked a guarantee of 80 degrees on the second floor, 75 degrees on the first and 70 degrees in the basement flat at 10 degrees below zero weather. There are seven rooms on the second floor that must be heated through four 12x3½-inch stacks.

Two old gravity furnaces were removed and the new system will have but one heater. All warm air registers are in the floor and there are no returns of any type in the old system. Rooms 105-106-107 on the first floor, and rooms 204-205-206 on the second floor were the only areas successfully heated with the former installation. The basement flat was stove heated. The first floor bath had no connection to the furnace. The house construction is frame: clap board, siding, studding, lath and plaster. There are double hung sash, but no storm



This sketch and the one at the top of the page show elevation and top views of the furnace and blower. Attention is called to the tight, octagonal casing; the wide blower boot, which is really a housing; the twin wheel blower; the twenty 6-inch leaders taken off the top of the bonnet. Full explanation of the design is given in the text.

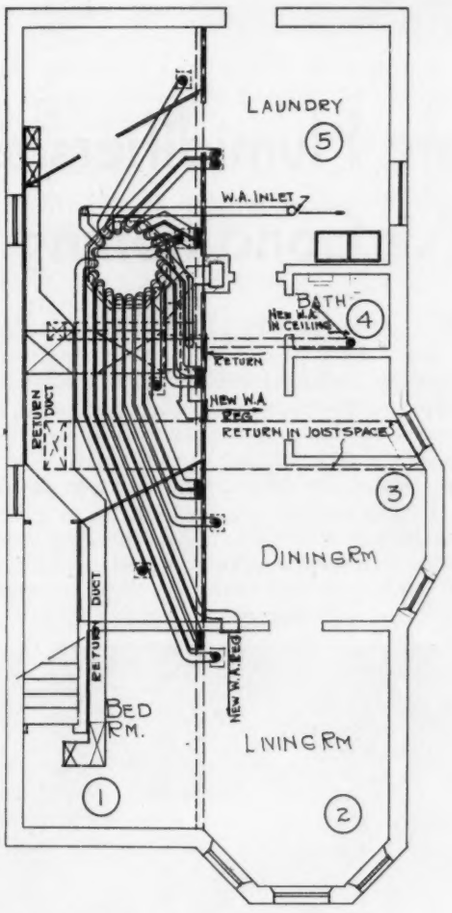
windows. The cubical capacity is 26,000. The ceiling heights are 7'-0" in basement, 9'-9" first floor, 9'-6" on second floor. House faces west, with prevailing winds from southwest.

For the test system returns were placed as shown on plans. The entire house was calculated for heat loss on the B.t.u. method.

At 140 degrees inlet temperature it was assumed from past tests that one 6-inch pipe would deliver 10,000 B.t.u. at 800 feet per min. velocity. This figure will vary according to the length of the duct, and the floor to which the leader is connected. All rooms or stacks that must carry in excess of 10,000 B.t.u., were connected to the bonnet with two 6-inch pipes run side by side. All pipes have volume dampers.

The test furnace is all steel with a 33-inch body. Grate area is 4.9 square feet. Smoke pipe is 12 inches. The radiator is at the top of the body, leaving a large plenum space around the base of the heater with small air passages over the dome and radiator.

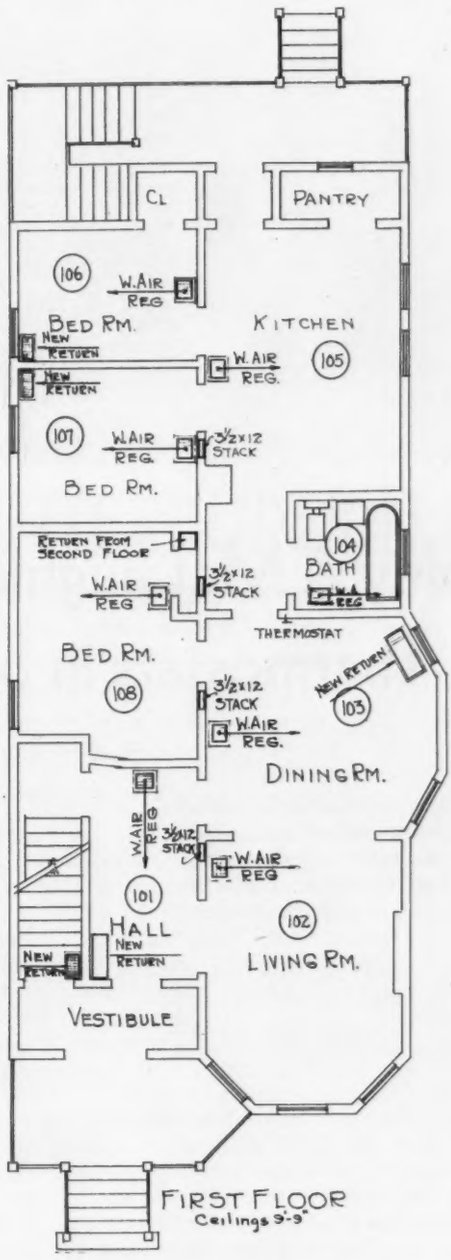
The casings were made octagonal to eliminate



BASEMENT FLOOR PLAN
Ceilings 7'-0"

This is the new system showing the basement apartment and the runs of 6-inch leaders. The return system is entirely new. The basement apartment was originally heated by a stove. Leader takeoffs are all stub collars with dampers and 90 degree elbows pointed the way the run goes.

housing, and the radiator is 1½ inches from the outside casings. The casing top is 12 inches high, pitched top. Twenty 6-inch runs are taken from the top of the hood. These runs were equally spaced around the outside edge of the hood and there are no dead corners. Each run at the hood has a 6-inch collar which contains the volume damper and terminates in an elbow pointed in the direction of the run. The leader to room 3 drops 8 inches, and all other runs are without elevation. No leader has



FIRST FLOOR
Ceilings 9'-9"

The system is guaranteed to heat the first floor to 75 degrees at zero. Of all the rooms, only numbers 105, 106 and 107 were ever warm enough. All the old floor registers are being used, but new returns are used, since there were no returns previously.

less than two elbows and some runs have four elbows.

One of the stacks to the second floor must carry 285 c.f.m. or a velocity of 985 feet per minute, in the 12x3½-inch stack. One of the items of investigation will be the question of comparative efficiencies in higher inlet temperatures, and less volume of air, or lower inlet temperatures and more air with higher stack velocities. The effect on the

(*Continued on page 37*)

The firm occupies two buildings joined with a one-story show window and display room. Offices and shop lead off the display floor. Timely displays are featured according to season in the large corner windows.

Braley & McLaughlin Feature Humidifiers and Thermostats in Selling Air Conditioning

By M. S. Sullivan

AS a means of inducing warm-air heating sales and lessening sales resistance, Joseph D. McLaughlin, owner and manager of the warm air heating contracting firm, Braley & McLaughlin, Providence, R. I., has featured the use of humidifiers and thermostats. Sales in these accessories run fairly large throughout the year, and in many cases they actually result in selling new heating installations.

Says Mr. McLaughlin, "Thermostats and humidifiers are the two things that come closest to the lives of the average home-owner. They help him to keep his home uniformly and comfortably heated with the least amount of manual labor—a selling argument with strong appeal to every man and woman, and incidentally one of my best sales arguments upon which I concentrate. Tell the average home-owner the complexities of warm-air heating and air-conditioning, and it means little or nothing to him. But tell him the thermostat will so control his heater as to keep his home at a temperature at 72 degrees, and he's won.

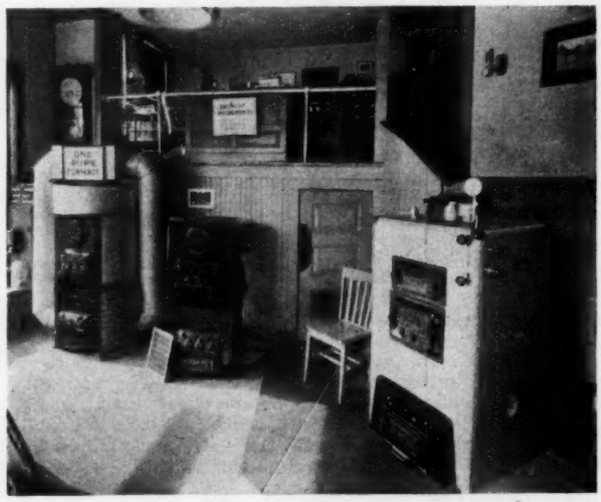
"For these reasons, in my selling talks, I use less of technical expressions, less stress on entire heating systems, but continued hammering on the operation of these two accessories. And I describe these in popular terms so that they appeal to the man as work-savers.

"On most of last year's jobs we installed thermostats and on many we put humidifiers, giving us, not only new business in heater installations, but adding up a good year's volume on accessories."

Occasionally Mr. McLaughlin gets his workmen together, and they informally talk over the use and operation of these and other things connected with warm-air heating installations. These meetings, briefly, keep the men "sold" on these items so that in their daily contacts, they boost the use of them.

The firm's advertising of these items consists largely of newspaper advertisements, each about 2 by 2½ inches in size, in three local newspapers,

(*Continued on page* 39)



Behind the show windows is a clean, bright show room with furnaces and boilers, as the firm sells both. On the floor are shown controls, registers, a humidifier and the supply and return grilles of the office heating furnace.

Automatic Controls

(*Continued from page* 31)

to check the fire ahead of the room thermostat and thus prevent runaway fires. This location plus correct settings also prevents carry over of temperature, so that in this system when the room thermostat is satisfied, the fire is slowing down and heat which is not needed is not generated.

Setting for Stack Control

The setting of a stack limit control must be higher than for bonnet locations. Ordinarily a setting of 500 degrees as the "high" will give the maximum useful combustion, beyond which the heat generated cannot be transmitted to the air stream. Also the differential for a stack control, or the difference between "high" and "low," should be more than in a bonnet control, and engineers suggest at least 50 degrees or as much more, but not exceeding 100 degrees, as the system requires.

Just how much to set the differential can be quickly determined by starting with a wide differential and gradually cutting it down until the minimum setting which will permit the fan to run continuously is reached.

The stack control, like the bonnet control, is wired in series with the room thermostat and, so far as operation is concerned, operates just as though it were in the bonnet.

It might be well to point out here a small refinement in this system which has proved valuable under certain conditions.

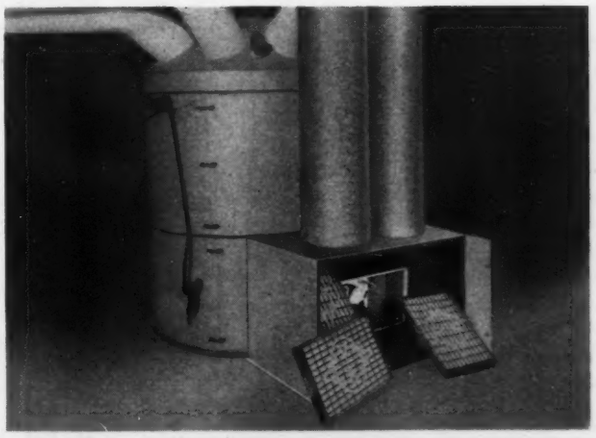
When this system is set according to the above suggestions there may be danger with some types of fuels in mild weather of the fire going out. The reason, as we pointed out, is that with proper balance the room thermostat may be satisfied just before the limit control "low" setting is reached or very shortly thereafter, with the result that the thermostat is satisfied on a very low fire. In mild weather the fire would not have a chance to pick up because the thermostat has shut off the entire system.

Hold Fire Control

Also in mild weather the room thermostat may remain satisfied during long periods in the middle of the day, with the fire gradually dying down. And on such days we usually find a sudden coolness in the air of early evening and then the thermostat demands heat suddenly. This demand usually finds the fire in poor condition to respond and the long lag in time between the demand of the thermostat and the starting of the fan permits the room to cool uncomfortably.

The best solution to the problem is to install a third control and wire independently as a fire control.

This auxiliary control is known as a "hold-fire" unit. Its function is to keep a predetermined bonnet temperature during periods when the room thermostat is satisfied and hence the draft closed during long periods. This hold-fire unit is placed in the bonnet and set for a low temperature, say, 90 or 100 degrees. Whenever the bonnet temperature falls to this setting the draft opens for a short period or until a hold-fire "high" setting of about



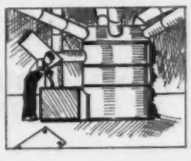
Change to Complete Comfort without Heating

INTERRUPTION!

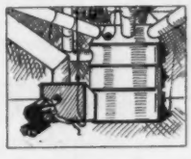
Here is how YOU and an AIR PACKAGE can convert *any present furnace* into a Modern Air Conditioning System. You can install it in mid-winter *without disturbing the fire.*

CUT FURNACE CASING
Simply trim the Air Package nosepiece to fit the furnace curvature, and cut a rectangular opening in the furnace casing.

PLACE THE AIR PACKAGE
Push the Air Package up to the furnace and secure it to casing with ordinary sheet metal screws.



CONNECT COLD AIR RETURNS
The Cold Air returns can enter the top or back of Air Package, whichever is most convenient. A flat plate with a collar is the only transition necessary.



MAKE ELECTRICAL CONNECTIONS
A flush mounted conduit box on the side of the Air Package makes the electrical connections simple. Wiring diagrams are always furnished.

Air CONTROLS INC.

1960 W. 114TH ST. CLEVELAND, OHIO

Division of THE CLEVELAND HEATER CO.

30 degrees above the hold-fire "low" is reached. This hold-fire unit is an independent unit and is connected in parallel with the room thermostat so it can open the draft in accordance with stack temperature.

This "hold-fire" unit can also be placed in the stack, where it more truly reflects the condition of the fire. In such a location its temperature settings would be higher to accord with flue gas temperatures, but the differential would remain about the same. The University of Illinois tried such a stack "hold-fire" in their control tests and found the unit advantageous in mild weather.

Furnace Behavior

In the discussion so far little has been said about typical furnace operating periods. For example, contractors know that in severe weather there is a long "pick-up" period in the morning during which the room thermostat is demanding heat, the draft is open and the fire accelerating continuously and the fan runs constantly or as continuously as the heat-producing capacity of the furnace will permit.

The need here is to prevent the fire from running away.

The solution to the problem lies primarily in selecting proper settings for the limit control. If the limit control "high" is too high, the fire has a good chance to run away. Also if the limit control "low" is too low, the draft remains closed too long and the fire cannot die down. Low setting of the limit control "high" plus a closer differential, which means a "low" setting close to the "high," serves to keep the draft and check working frequently and prevents the fire from running away or lying idle.

This is important in this hookup where the fire must be under close control in order that the fire corresponds to the rise or fall of the room thermostat.

Conclusions

The features of this third control system may be summarized as follows:

1—Uniform room temperature regulation with a minimum of temperature over-run.

2—Uniform and positive control of combustion.

3—Easily adjusted for extremes of weather.

4—Damper operation dependent on both room temperature and bonnet air temperature.

5—Auxiliary units like the "hold-fire" or stack control easily applied.

◆ ◆

In the January issue we will begin discussion of the fourth hookup wherein the room thermostat controls the fan and a bonnet control operates the dampers. The effect is to keep "heat on the shelf." Some interesting results have been obtained with this system.

Get Started RIGHT in Air Conditioning!

Investigate the

WATERBURY COMFORTROL

AIR conditioning is just getting into its stride. Those who succeed in this field will make quality and performance their first consideration.

In both large and small homes the Waterbury COMFORTROL gives a dramatic demonstration of what complete air conditioning does—a steady circulation of pure, balmy air throughout the house, gentle or brisk as desired—all tobacco smoke, odors and dust whiffed out—all air so thoroughly washed and filtered that bacteria and hay fever pollens are removed—controlled humidity — year-round enjoyment.

This deluxe performance is insured by Waterbury features and equipment that are the result of years of experience and research. Nothing else now on the market offers so much in comfort-giving, efficiency and ease of operation.

CLEAN HEAT is another basis for the outstanding success of complete Waterbury Air Conditioning Systems. CLEAN HEAT is a solid foundation upon which to build your business in this rapidly growing field. Furnaces that soon leak coal-gas, soot and dirt give any man's business a black eye.

The WATERBURY SEAMLESS FURNACE

is built of heavy blue steel, welded into one solid, sealed piece. No cemented nor castiron joints. Not a chance for leaks. New, specially-designed models for oil and gas.

WRITE TODAY!

Let us show you how the complete, new Waterbury line will fit into your plans for a steadily increasing business and income.

New OIL Burning Furnace

WATERMAN-WATERBURY CO.

1122 Jackson St. N. E. Minneapolis, Minn.

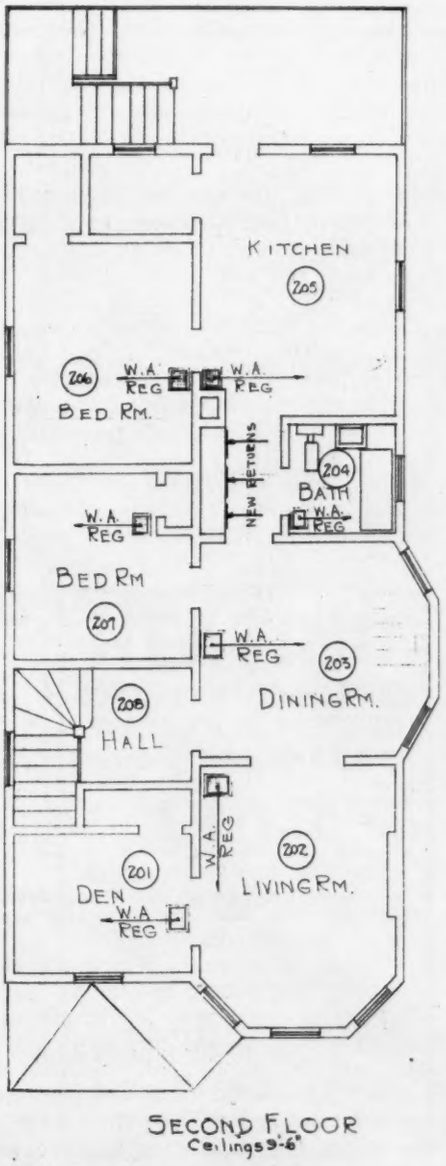
Artisan Test House (*Continued from page 33*)

comfort of the rooms heated under both conditions will be observed.

The fan is of the "assembled" type. The blowers are two in number as shown in the cut. They have a capacity of 1200 c.f.m. each at 670 r.p.m. and ⅛-inch static pressure.

The motor is ⅓ h.p.-1750 r.p.m. The motor is in the "air ways" or inside the rectangular housing.

Controls consist of room thermostat, temperature regulator, furnace fan control, limit control,



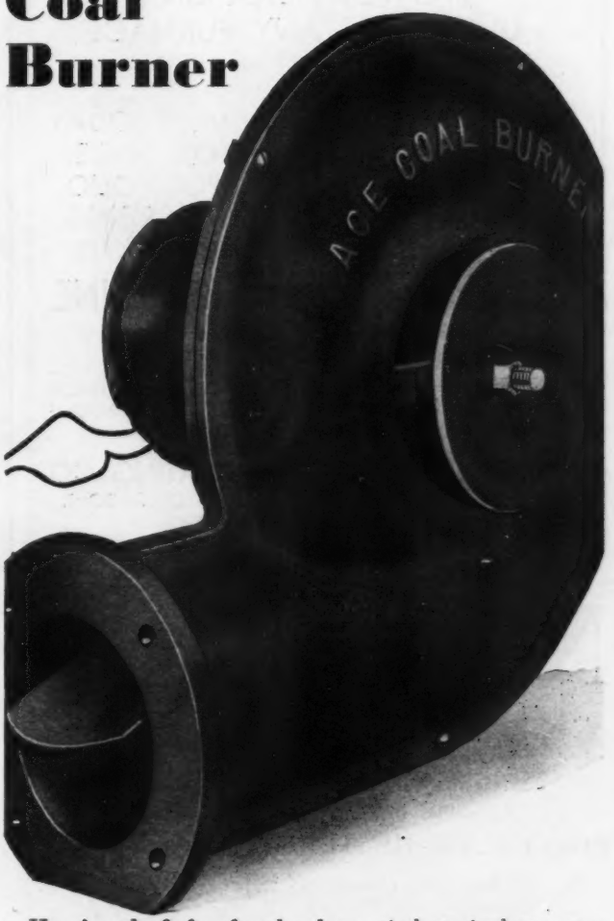
SECOND FLOOR
Ceilings 9'-6"

All second floor stacks are 12 by 3½, with the result that the stack serving rooms 205-206 has to carry 285 c.f.m. at a stack velocity of 985 f.p.m. There are only four stacks; three carry two registers each, as follows—205-206; 204-207; 201-202; and a single, 203. The only return from the second floor is one stack in front of the bath using a first floor closet.

relay and transformer. The room thermostat will be temporarily located as shown on drawing, but will be moved from place to place during the tests.

The first humidifier tested will be the pan type

Dealers! Good PROFITS with the ACE Coal Burner



Here's a draft fan for the domestic hot air, hot water or steam furnace which fits right into the furnace dealer's line! Installed to blow under the grate, the ACE permits burning the fine grades of hard coal such as buckwheat and rice, which cost from $4.00 to $6.00 per ton LESS. You can show your prospects an actual saving of this amount on every ton of coal they use, PLUS the convenience of thermostat regulation. Installation is simple, price complete with thermostat is very low; fan has high-grade, fool-proof motor, sturdy cast-iron casing, high efficiency wheel. VERY quiet in operation.

HUNDREDS of these fans are being installed every week—at a substantial profit. If you are interested, write for details, NOW! Ask for Bulletin 2912.

Buffalo Forge Company
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Benefactor Furnace

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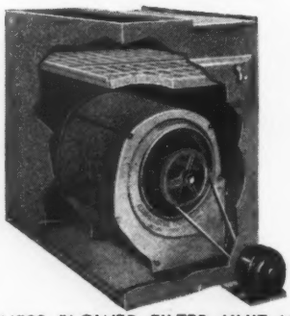
HIGHEST QUALITY — WELDED STEEL CONSTRUCTION—AT A LOW CAST IRON PRICE

BLOWER FILTER UNIT USED WITH ANY FURNACE



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HESS LINE

HESS BLOWER FILTER UNIT NO. 1 DELIVERS APPROX. 1,500 CU. FT. OF AIR PER MIN. THROUGH THE ROOMS. VERY LOW PRICED.

HESS WARMING & VENTILATING CO.
1201-1211 S. WESTERN AVE. CHICAGO, ILL.
ESTABLISHED 1873

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FORCED AIR HEATING

—How to Lay Out, Design and Install.

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11. Branch Takeoffs.
12. Volume Dampers.
13. Bonnets and Plenums.
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15. Multiple Inlets.
16. Thermostatic Control.
17. Mechanics of a Heating System.
18. Chimneys and Draft.
19. Fan Physics.
20. Designing a System by the "Mechanical Code."
21. Sizing by Friction Chart.
22. "Tailor Made" Trunk Ducts.
23. Air Conditioning Radiator Heated Houses.
24. Specifications and Contracts.

Appendix: Voorhees' Tables of Coefficients and Factors.

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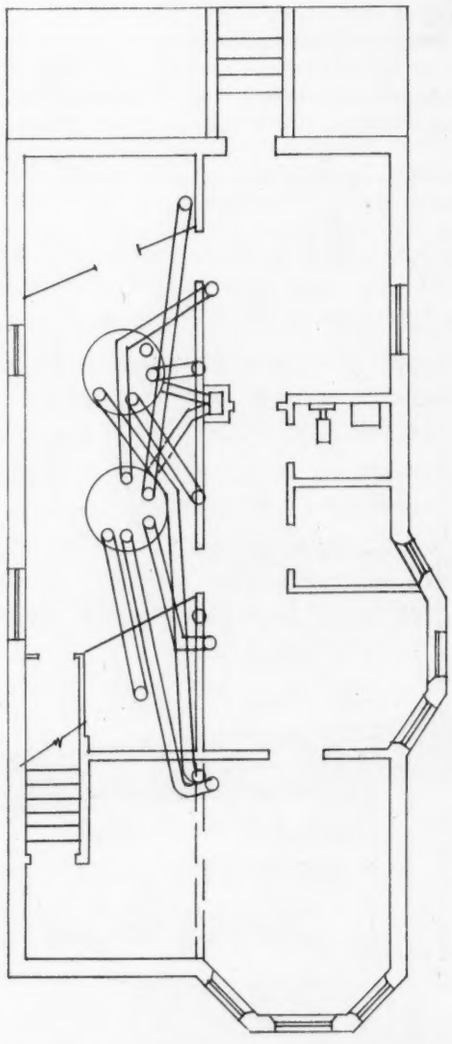
This new book by Platte Overton tells "how to do it." It is written so even a beginner can understand it. It leaves the theories about forced air work to text books, and gives its full attention to telling exactly how to lay out, design and install a forced air system for any house and under all conditions.

This great new volume is offered ARTISAN readers for only $1.00. Send your dollar now, and your copy will be sent as soon as our supply is received from the printer,—some time before Christmas.

AMERICAN ARTISAN, 1900 Prairie Ave., Chicago

located in the casing below the radiator. An automatic float will control the supply.

An interesting investigation will be the observing of the gravity effect on the performance of the blower. The basement flat will be one difficulty in the way of any length of gravity service with the fan idle, but this remains to be seen.



This is the old system with its two gravity furnaces. One served the first floor, the other the second.

However, this is one item in which the controls and their setting is expected to plav an important part. Temperature variations for length of duct, position of collar on the hood, and air flow through casing area, will be investigated.

The test is of interest from the point of successful performance and will be the theme of the future article, but the installation expense, and the price for which such a system can be installed will be touched upon. All fads and frills have been eliminated. While the casings, apparatus, and all exposed piping will be spray painted and leave nothing to be desired in the way of appearance, shop work is almost eliminated. Everything about the system is "factory made" except the returns. These are exceptional as there were no returns in the original system.

Readers are advised to study the plans and any and all questions regarding this installation will be answered.

Braley and McLaughlin

(*Continued from page* 34)

covering about 90 per cent of Rhode Island's 687,000 population. This copy reached the cities of Pawtucket and Central Falls, some of the Blackstone valley, and Metropolitan Providence (including Providence, Cranston, East Providence and adjacent towns). Copy appeared twice each week during January and February. Copy content remained the same, being largely of a reminder nature in which repetition was desirable.

As to actual results, Mr. McLaughlin cannot trace direct results, although he believes if it serves no other purpose than keeping his company name and address before the public, it warrants the expense. The entire advertising expenditure of the firm amounts to approximately $2,000 a year, the largest percentage of this being spent on this newspaper advertising.

Various pieces of manufacturers' literature are sent out with monthly bills as envelope stuffers. Postage and literature costs on this effort are low and Mr. McLaughlin considers them very good publicity.

No door-to-door work is done, this form of advertising being considered "shooting wild" and proving expensive in the long run. From the various forms of publicity, the firm receives sufficient leads to keep them busy both on sales and installation work.

"By far our greatest source of business," adds this heating engineer, "are our former customers who have liked their installations and recommended us to their friends. We know for fact that almost every job on which we have installed thermostats and humidifiers has received valuable publicity from the home-owner and his family. From this source, leads come in over the telephone, asking us to call on them, inquiring about an approxi-

Small sized newspaper advertisements of this type are much relied on by the company to keep its name before the people of Rhode Island and to attract seasonal business.

Cook Control Systems for Warm Air Furnaces Equipped with Blowers, Using Hard Fuel, Oil, Gas or Stoker

When heat is required in the living quarters, Cook system accelerates and maintains the fire. It also starts the blower as soon as the furnace bonnet is sufficiently hot to permit air circulation. As long as heat is required, the fire will continue to burn and the blower to operate provided the furnace bonnet stays within the desired temperature range. Should this temperature fall too low, the blower will stop to avoid circulating cool air; and should the bonnet temperature rise too high, the fire will be checked to avoid temperature over-run and fuel waste.

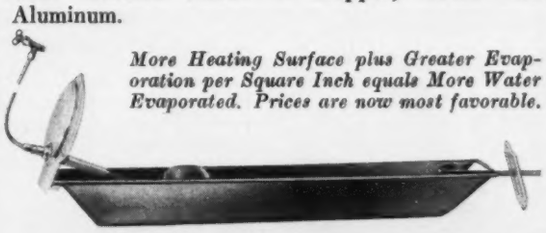
Summertime operation of the blower is provided automatically, thus giving air circulation in hot weather.

Write for information and prices.

COOK ELECTRIC COMPANY
2700 Southport Avenue, Chicago

Universal Scientific Humidifier

Adjustable to any Type Bonnet — Straight or Pitched. Simple, Dependable, Guaranteed Operation. Rustless—Made of Copper, Brass and Aluminum.



More Heating Surface plus Greater Evaporation per Square Inch equals More Water Evaporated. Prices are now most favorable.

UNIVERSAL HUMIDIFIER COMPANY
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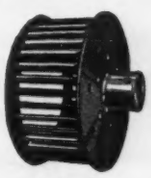
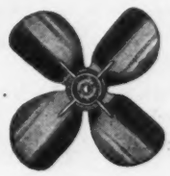


TORRINGTON
FANS AND BLOWER WHEELS

Patented All Aluminum Multiblade, Balanced Blower Wheels. Unexcelled for quiet and smooth operation.

32 years' experience building Propeller Fans—assembled, balanced and tested ready to mount on motor shaft.



THE TORRINGTON MFG. CO.
14 FRANKLIN ST.
TORRINGTON, CONN.

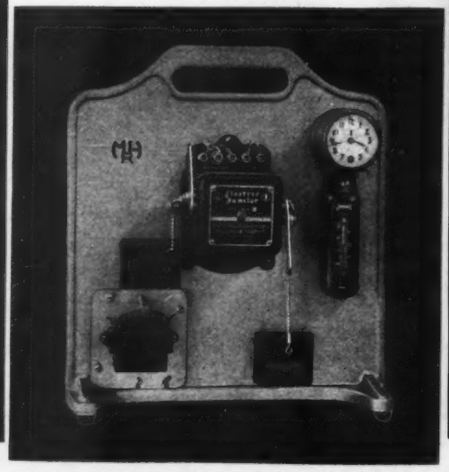
This ELECTRIC JANITOR DEMONSTRATING DISPLAY

WILL BUILD SALES

■ THIS completely equipped display and demonstrating stand, ready for mounting your Electric Janitor, either model, is supplied without cost with orders for 8 or more Electric Janitors, Minneapolis-Honeywell's lowest priced regulator for all domestic coal, coke or similarly fired heating plants. Order through your jobber or write for further information. Minneapolis-Honeywell Regulator Company, 2726 Fourth Avenue South, Minneapolis, Minnesota. Branch and distributing offices in all principal cities.

■

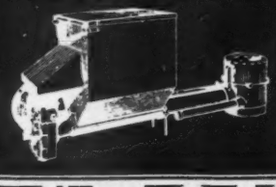
MINNEAPOLIS-HONEYWELL
Control Systems



FINDLAY

A Dependable Line—

upon which to build a permanent and profitable business. Domestic, Commercial and Industrial Sizes.



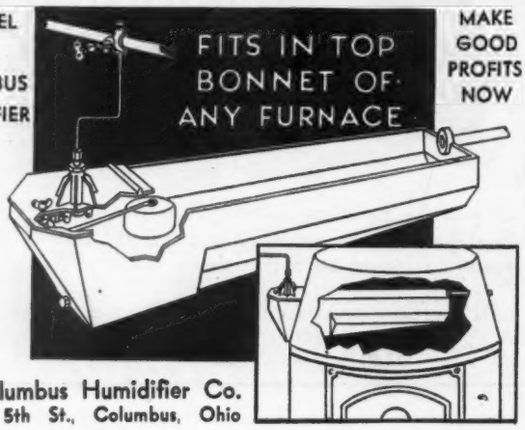
MANUFACTURED BY
THE BLUFFTON MANUFACTURING CO.
FINDLAY, OHIO

STOKERS

MODEL "C" COLUMBUS HUMIDIFIER

FITS IN TOP BONNET OF ANY FURNACE

MAKE GOOD PROFITS NOW



Dealers Write Today

The Columbus Humidifier Co.
154 N. 5th St., Columbus, Ohio

mate price of a thermostat or a heater, calling for repair parts or furnace cleaning. The great majority of the persons for whom we do work disclose in some way that they have a friend or have heard of a family who liked our work very much.

"Not only do we get the most leads from this source, but they prove the most valuable leads. Very close to 100 per cent of them result in some kind of work or service! That can be said of no other source of business. A short time ago I looked over these leads for the previous year to follow up on those not heard from, and *only* one lead remained unresponsive!

"Possibly we do more than the average firm to get this word-of-mouth publicity. We never slight work regardless of the most discouraging conditions. We have one man who has been with us 29 years, another for 27 years, and all have been with us for several years. If they see any little thing needing done about a heater, they do it without asking if it's been ordered. I firmly believe our crew of workmen take as much actual interest in their jobs as I do which is a valuable state of affairs in getting satified customers. It all results in making every customer a field salesman for our firm."

Uses Demonstrations

As demonstrating units, Mr. McLaughlin occasionally requests permission of a customer to show that installation to a prospect, a technique in selling that almost always results in sales. In such instances, only one prospect (which may include two or more members of a family) is taken at one time so that the sales visit is concentrated on that lead.

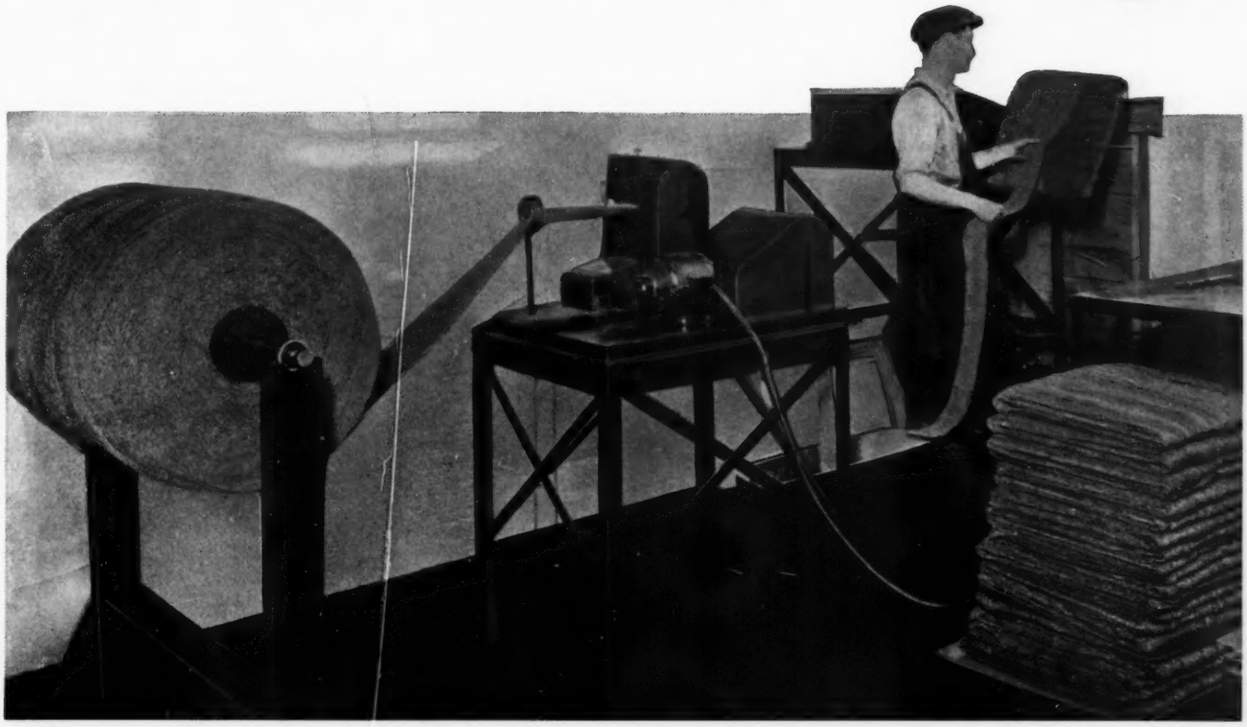
The company's office and salesroom are heated with a warm-air installation which is also used as a demonstrating unit and as proof of their satisfactory performance. On the sales floor are always shown one or two set-ups with accessories. While not a large number of persons visit the place of business, still there are enough to warrant maintaining this year-round display.

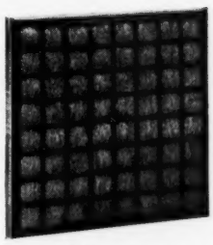
A profitable source of leads for selling thermostats is found in following-up installations made before the thermostat attained its present popularity and before the company started pushing them. Another source of business is the Providence Gas Company, a local utility, whose salesmen are on the road daily contacting architects, contractors, church managements, apartment house owners and others to sell gas-fired warm air heating. For this work, Mr. McLaughlin does all estimating, and makes all lay-outs, the utility salesmen following up to complete the sales. Billing is done through the utility which, in turn, pays Braley & McLaughlin for its part of the installation.

"One far-reaching result of all thermostat and humidifier sales," comments Mr. McLaughlin, "is that they make the heater operate more uniformly, make tending easier and more economical which in turn pleases the home owner by making the installation more efficient. If for no other reason than that they result in better performance, we should sell them for it all results in more business in the long run.

"We intend to push these items more this season in view of our past year's sales and profits on them."

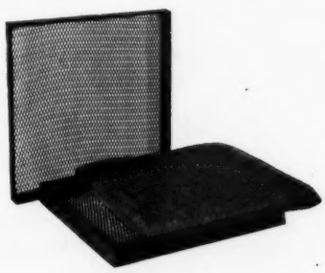
BETTER--*and why!*





THROWAY

The filter pad is in a cardboard container. Throw the whole unit away when used.



RE-NU

An all-metal renewable type furnace filter. Only the filter pad replaced.

This photograph tells a graphic story of how RE-NU and THROWAY filter pads are made and why they are superior.

Continuous strands of split-wire—a form of steel wool—are woven by a special process into mats of uniform size and thickness.

Our engineers selected split-wire after testing hundreds of materials suitable for cleaning air because of its unequalled efficiency in dust removal and low resistance to air flow.

In the weaving process, each strand of split-wire is coated with viscosine to assure high cleaning efficiency and maximum dust-holding capacity.

Process and use of split-wire for cleaning air and gases are fully covered by patents and only available in American Air Filters.

You can always be sure of the newest and best when you use American Air Filters. *"Profits from Clean Air"* covering full line free on request.

AMERICAN AIR FILTER COMPANY, *Inc.*

113 Central Avenue Louisville, Kentucky

NRA MEMBER U.S. WE DO OUR PART

IN CANADA, DARLING BROTHERS, LIMITED, MONTREAL, P. Q.

AMERICAN AIR FILTERS

PACKAGES OF POWER FOR AIR CONDITIONING

NRA MEMBER U.S. WE DO OUR PART

WHERE ADJUSTABLE-VARYING SPEED IS REQUIRED . . . on unit heaters; unit coolers; cabinet-type units which combine heating, cooling, humidifying, dehumidifying, washing and filtering; domestic air conditioners; blowers; and other domestic applications . . . General Electric recommends the Type KC capacitor-motor (No. 2A above).

This motor is particularly suitable for applications like these, because it has low-torque, fan-duty windings, assuring smooth, quiet starting when direct-connected to the fan. It is QUIET. Adjustable-varying-speed motors permit adjustment of air delivery from fan.

One of our fractional-horsepower-motor specialists, located in a G-E office near you, will be glad to tell you more about this motor, and about our complete line of electric equipment—transformers, control, wire and cable, etc. General Electric, Dept. 6A-201, Schenectady, N. Y.

Check those fractional-horsepower-motor applications concerning which you would like further information, and return this coupon to the nearest G-E office, or General Electric, Schenectady, N. Y.

Air Filters
Air Washers
Atomizers
Automobile Heaters
Barn Ventilators
Bathroom Heaters
Blowers (all types)
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Bus Heaters
Cabinet-type Units for heating, cooling, humidifying, dehumidifying, washing, and filtering air
Domestic Air Conditioners
Exhaust Fans
Fans
Forced-draft Units
Furnace Fans
Garage Heaters
Humidifiers
Incubator Fans
Industrial Air Conditioners
Kitchen Ventilators
Paint-spray-booth Fans
Propeller Fans (all types)
Railway-car Air Conditioners
Railway-car Precooling Units
Refrigerator Fans
Room Coolers
Rotary Roof Ventilators
Schoolroom Heaters
Special Devices
Unit Coolers
Unit Heaters
Unit Ventilators
Window Ventilators

210-237

GENERAL ELECTRIC

Home Building—A Weak Spot in Our Business Picture

A UNIFIED nationwide policy on housing was adopted at the closing session of the two-day conference of the National Association for Better Housing held recently at the Union League Club, Chicago.

A group of fifty civic, social and business leaders was appointed as a governing council, headed by J. Soule Warterfield, vice-president of the Starrett Building Company, acting chairman of the conference, to carry out this plan of unification.

Establishment of a Federal Mortgage Discount Bank to function in the field of long term credit as does the Federal Reserve Bank for short term credit was urged in the report of the conference finance committee which was adopted unanimously by the conference.

Proposed Plan

The five-point housing plan, which the conference turned over to the governing council for action, was as follows:

1. That there be established some agency for serving as a clearing house of information between the several branches of the industry.

2. That steps be taken at once to institute a market study of the home building field, with a view to ascertaining in a thorough and scientific way the nature of the public's wishes as to the kind, type and location of homes desired.

3. That a special committee be promptly established to consider what steps may be taken to speed up greatly the volume of modernization and rehabilitation to be done during this coming winter. It is felt that this type of activity offers possibilities of job-making that have an especial appeal at this time.

4. That particular attention be given to extending the type of housing project proposed by the mayor of Euclid, Ohio, and approved before the conference by Robert D. Kohn, federal housing director.

5. That the relation of housing to community planning be emphasized and in order to facilitate the development of comprehensive community plans, the conference respectfully recommends to the federal Public Works Administrator that the function of planning itself be recognized as a public work, and as such eligible to receive grants and loans such as public works that involve physical construction can now obtain.

This is a concise picture of the highspots of the accomplishments of the conference, which was conducted as an open forum in which there was free and frank discussion of the problems of the home building industry, where everyone had an opportunity to give his own viewpoints of the situation and what should be done to end the stagnation in home building and put more men back to work.

Mr. Kohn, in commenting on the steps being taken by the conference, declared that the most admirable part of the association's report on finance was that it shows a well-defined plan.

"Planlessness has been a big factor in what I might call the chief fault for the present situation—the standstill in building," he said. "Projects backed by responsible local groups are welcomed by the government. It is new planning along the lines contained in your committee report that is the basis of what the government wants to do."

The Owner Class

Mr. Kohn assured the conference that there will be no competition with existing buildings, but that the government program seeks to restore prosperity by helping a class of people who have until now been overlooked.

"Somewhere between the upper and lower extremities of society there is a third group which never has had anything, but if helped to a better standard of living would furnish a basis of prosperity that would outdo the automobile and the radio because it would be permanent. It is those we are trying to help," de-

"The fact that we will tear down practically as much as we build up ought to put the kibosh on any talk of competition. There are thousands of houses in every city that ought to be competed with and should have been torn down long ago."

Financing

The finance committee report in part concerned itself with governmental aid in financing as an emergency measure. At least a billion dollars, it stated, should be set aside out of the government funds for the creation of employment through wisely conceived loans for housing projects. These funds, it was suggested, should be distributed to non-profit civic corporations dealing directly with the government and should be used mainly for the construction of new housing. Advances for not more than twenty-four months for remodelling, repairing and rehabilitation are recommended. Speeding up of demolition is proposed, via a subsidy of not to exceed $500 each for demolition of obsolete and objectionable housing structures.

Chairman Warterfield expressed himself well pleased with the spirit of the conference, declaring the work it planned would be carried out as speedily as possible to do a real job.

. . . the problem corner

Aluminum Solder

American Artisan:

Some time ago you published information on aluminum solder and stated that no "best" solder had yet been developed.

I have a solder which I have used with satisfaction. This solder consists of fifty per cent tin, forty-five per cent lead, ten per cent zinc. To make the solder melt the tin and lead and bring the mixture to a high temperature or until the metal mixture has a bluish color. Then drop in the zinc in small amounts. Stir the metal with a pine or ash paddle until the zinc is entirely melted and mix with the other metals.

While the mixture is still at a high temperature, pour into iron molds. Just before the solder is solidified, jar or rap the molds lightly. This can be done by having the molds on a bench and pounding on the bench with a hammer. Keep up this pounding until the solder is cooled.

In using this solder I have found a good plan is to scrape the aluminum to a real bright finish, use common lard for a flux. Whatever you do, don't put hands or fingers on the spot to be soldered. The place to be soldered can be tinned with aluminum solder and half and half solder.

V. Flenniken, Sylacauga, Ala.

Fan Tests

American Artisan:

Please give me information on how to test ventilating fans by a standard test procedure. I would also like to establish the amount of air circulated and also how to establish the resistance or static pressure for any installation. **A. L. B., California.**

Reply by The Editors

The American Society of Heating and Ventilating Engineers has a very specific test for ventilating fans. We are sorry that we have only one copy of this standard fan test, but we are sure that if you will write to the A. S. H. & V. E., 51 Madison Avenue, New York, they will be glad to supply you with the test data which is in printed form.

We do not know just what you mean by your third paragraph, "the amount of air circulated or put out also for the resistance or static pressure." If you have reference to how to establish the total resistance of a residential forced air heating job, the answer in brief is—the static pressure or resistance of the longest run to a register plus the resistance through the longest return run.

These two resistances should be added to the resistance of the furnace, the filters and the fan. The resistance of the furnace, filter or fan can be ascertained from manufacturers' tables of resistances for each particular unit, and the resistance for the piping system is calculated by taking the round pipe diameter of the supply and return run which you plan to use, determine the length by taking the total length of run and adding ten feet for each elbow. This will give you a total length of say forty feet of pipe, plus three elbows, add ten feet for each, equals seventy feet on the supply, plus forty feet of pipe and two elbows, add ten feet to each for the return—total 130 feet for a 15-inch round pipe (this fifteen inches is taken as an example, of course). Then secure a copy of the frictional resistance chart, find the c.f.m. that you are going to supply (for example, 3,800 c.f.m.) on the right hand margin, advance across the chart to the left until you intercept the 15-inch diameter line and project to the bottom, where you will find the resistance for the system (say 1.1) which is for a duct 100 feet long. This resistance must be multiplied by the total length, which is 130 feet, or 1.1 plus 33⅓ percent of 1.1, which will be the resistance of the system.

If this is not exactly the information you want, write us a little more in detail.

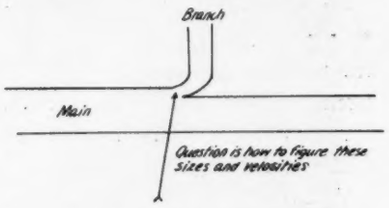
◆

Branch Velocity

American Artisan:

I have kept track of your various problems and serial articles and have enjoyed and appreciated them.

I would like to know the issue or issues in which Platte Overton discussed velocity of air leaving mains to branch lines. Also how do you figure the throat size and establish the velocity?



F. E. H., California.

Reply by The Editors

The articles by Platte Overton discussing sizing of branch throats, mains and branches, also velocities were part of the general series published in 1931 and 1932.

The particular articles you refer to appeared as follows:

October 12, 1931
November 9, 1931
November 23, 1931
December 7, 1931
February 15, 1932
April 25, 1932

◆

One Way Dampers

American Artisan:

In attempting to heat garages with a forced air system we find it necessary to use a one-way damper which, with slight pressure of air, will open to allow air to pass into the garage, but which, in case of back pressure from the air in the garage, will immediately close, so that carbon monoxide and other fumes cannot get from the garage to the furnace.

Do you know any market data concerning such a damper?

Reply by The Editors

A list of manufacturers of the damper type you require is being sent.

Furthermore, in view of the fact that we have never had a problem of exactly this type, we are not sure any suggestions we might make will apply. We believe, therefore, that some of our readers may have solved problems of this type and can give you some practical information explaining how their solutions worked out.

Has any reader worked out this problem and what did you use?

The Problem Corner . . . . . .

Floor Draft

American Artisan:

I have a job in a country school heated with a pipeless furnace. The school board complains of drafts on the feet of the pupils. I suggested a three way system supplying warm air to three points, but the board wants cold air faces placed in the floor and connected into the furnace by pipes run between the joists.

Also, instead of bringing the cold air into the bottom of the casings the board suggests cutting the pipes into the bonnet around the pitched section. I have never seen a job done just this way and I want to know if it will work.

G. T., Kansas.

Reply by The Editors

We are convinced that as a general plan the system proposed by your school board has little to recommend it and your suggested three-way system is much to be preferred.

In general, a pipeless furnace usually creates some floor draft and this drawback is difficult to overcome in open rooms since air must return to the furnace and its path is across the floor. Cutting in two additional returns will probably set up a conflict of return air movement with the central return trying to get all the air and the two remote returns trying to flow but not having much success.

If these remote returns use small pipe or are at some distance from the furnace we cannot believe that they will actually draw much air. The resistance of the remote returns would be so much higher than the central return that it is difficult to see how they could work.

We believe that the three-way system you propose will be the best plan. You might change the pipeless casing to eliminate the central return and collect all return air from remote grilles.

◆

Duct Insulation

American Artisan:

Can you tell me where I can get information in regard to insulation materials for warm air furnaces and ducts, also their percentage of efficiency.

Does aluminum paint have any insulating effect when used on metal warm air ducts?

C. L. E., Illinois.

Reply by The Editors

We attach pages from the 1933 American Artisan Directory showing manufacturers of insulating materials for warm air furnaces and ducts.

So far as insulating value of these materials is concerned, the best information on insulation and its value is contained in Chapter XIII of the 1933 American Society of Heating and Ventilating Engineers Guide. This chapter shows the conductivities of various types of insulating materials for various ranges of temperature and different methods of application.

There are a number of pages in this chapter consisting of tables and it is impossible to give you a complete resume of these pages. However, we shall be glad to supply information for any specific types you have in mind.

Further, Samuel R. Lewis, in his book, "Air Conditioning for Comfort," says: "Ducts used for heating and cooling must have an insulation material which will resist both heat transfer and moisture condensation and must be fire-proof. The combination of these properties is not met by ordinary materials.

"Mineral wool compressed into blocks with diatomaceous earth forms an efficient double service insulation for ducts. Abestos paper is of little value. No insulation less than one-half inch thick is of much use. Good workmanship in filling joints is required. Canvas outside ducts is a fire hazard and gathers mildew. Insulation on the bottom of a duct should be of board form to prevent sagging."

◆

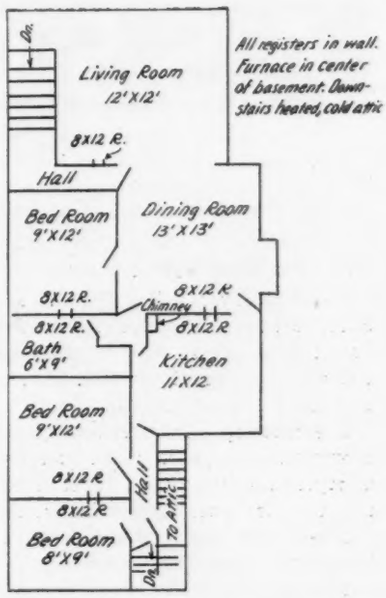
Heat Supply

American Artisan:

Enclosed is a sketch of a second story flat heated with a Stanford No. 142 self-cleaning furnace having a flat top. The furnace has been taken down, cleaned, reset and is in fair condition.

The leader pipes are all nine-inch and the stacks are 11 by 3-inch. Cold air is taken from the basement through two 8 by 20-inch openings in the lower part of the casing. A cellar window is left open and an attic door also to avoid an air-bound condition.

The chimney has a very good draft



but we seem to have trouble getting the fire to burn fast, even though the drafts are left wide open and the owner is burning the best stove size coal he can buy.

We have heated the house to about 75 degrees with wood, but even then the register temperature was not over 140 degrees.

The owner does not wish to spend very much money, but he does want better heat. What can you or your readers suggest?

R. W. F., New York.

Reply by The Editors

In view of the conflicting results obtained with your system we suggest that the trouble is lack of sufficient air to make combustion. The solution, therefore, would come from some means of increasing combustion and this leads us to consider some type of forced draft fan.

There are several fans on the market (we will be glad to supply names and addresses of manufacturers) which can be attached to the furnace in such a way that air for combustion plus forced draft are obtained.

It is probable that the type of coal your customer is burning has something to do with the results obtained. The size may be too small with the result that the fuel bed packs, thus slowing up combustion rate. With a forced draft blower this condition should be overcome.

Several of the fans on the market come equipped with or can be supplied with an automatic control (thermostat) which starts and stops the fan according to the needs of the house.

ASSOCIATION Activities

Fox River Valley, Illinois

The Fox River Valley Furnace and Sheet Metal Contractors Association held the second of their monthly social and educational meetings at Aurora, on November 13.

The meeting was attended by approximately forty-five contractors and a representative group of salesmen and manufacturers' representatives.

Dinner was served, followed by the important address of the evening delivered by Joseph G. Dingle, Certified Public Accountant, Ottawa, Illinois, and author of the series of articles on bookkeeping and cost accounting published in AMERICAN ARTISAN in 1931-1932.

By means of large charts showing figures from actual contractors' books taken at random around the country, Mr. Dingle pointed out how the average sales policy is broken down into material, prime labor, overhead and profit.

The shops shown by figures and charts ranged from a large operator doing $150,000 gross per year to a small shop doing $5,000 gross per year. Operations for all of the eleven shops shown were broken down piecemeal so that those attending the meeting could see exactly how gross income was spent.

The association is increasing its membership month by month and already has some of the best known shops in the Fox River Valley on its membership roll.

Jack Stowell,
President.

▲ ▲

Philadelphia

Our association has been quite active recently in establishing exchanges of information, credit, material and contact between contractors in the Philadelphia area. In addition to these activities, we have laid great emphasis on the placing simplified bookkeeping systems in the shops with monthly supervision, the addition of new members, through our activities as sponsors for the requirements of the NRA Code, as requested of us by the National Association of Construction industry, is a daily occurrence and it is probable that radical changes will be made during the next month.

Officers and directors will be elected; office activities will be added to and probably changes made in our Constitution and By-laws to take care of the plan proposed to have the now separate associations under one Philadelphia division association, yet allowing each association to act independently on matters in which their members are alone interested.

The code committee will attend the hearing of the Sheet Metal Roofing and Warm Air Heating Code to be held next Tuesday, November 28th and depending upon the result of this meeting a Mass Meeting of the trade will be held at which time officers and directors of the association will be elected and committees appointed as proposed by the Code.

Fred U. Ritter,
Secretary.

▲ ▲

Wisconsin

The Wisconsin Association announces that its 1934 Annual Convention will be held February 5 and 6 but that a definite place for meeting has not yet been determined.

Notice of the convention in the form of a call and including the program will be forwarded to members shortly. The board of directors' meeting to be held in Neenah, December 13, will decide the place of meeting and arrange the full program.

The state association convention committee held a meeting on Wednesday, November 15, and decided to eliminate the "Year Book" for 1934. Instead of the year book, space will be rented to exhibitors at a very nominal price. Convention sessions will be held in the exhibit room which will be an advantage to both exhibitor and members.

The tentative program calls for an exhibitors' session on Monday, November 5, an air conditioning session on that afternoon and on Tuesday, February 6, such problems as compensation and liability insurance, roofing and sheet metal, furnaces and accessories, will be discussed.

In accordance with the usual Wisconsin meetings an elaborate program and entertainment is being prepared and prominent speakers will be on hand for the meeting.

Paul L. Biersach,
Secretary.

New York State

We recently staged a membership drive with the result that we have increased membership by 60%. We are also at this time getting facts and details on better merchandising, collecting and general management of business from the leading manufacturers and jobbers throughout the country and will shortly stage an educational campaign through the medium of our bulletins. It is surprising to see how many manufacturers and jobbers are ready to assist the sheet metal worker and roofer to place his business on a more sound and profitable basis.

It might be interesting to know that Utica claims the largest city association for any city its size in the country, having 95% of the contractors enrolled. Prospects for 100% membership by January 1st are bright.

Fulton County Association comprised of Amsterdam, Gloversville and Johnstown is one of the strongest of its kind. They have succeeded in getting the hardware dealers in those cities to raise their prices on smokepipe, fittings, etc., to the prices of the legitimate shops. We do not believe this feat has been accomplished elsewhere in the country.

The Rochester and Utica Associations are visiting Syracuse shortly to stage their annual bowling and shuffle board tournament. The Challenge Cup now in possession of Rochester will be at stake.

Edw. F. Klick, Rochester, 2nd Vice-president has been appointed to fill out the term as Treasurer of the late Otto Goebel whose death occurred recently.

President Schmitt of Rochester is representing this Association at the Code hearings in Washington on November 27th and 28th.

Adolph Hesse,
Secretary.

▲ ▲

Danville, Illinois

Our association is working to line up all shops to join and get on a hand-shaking basis. So far we have taken in five new members. We are holding meetings every two weeks with good attendance. At present we have ten shops in the association with about five more to come in.

W. F. Lahr,
Secretary.

Association Activities . . . . . .

National Warm Air

Allen W. Williams, Managing Director, National Warm Air Heating and Air Conditioning Association announces that the public hearing on the furnace code was held October 23. Quite a number of changes were made. After the different divisions of the NRA go over the code the government will reprint it again as it is quite different from the printed code which the government mailed out ten days or two weeks ago.

▲ ▲

New Orleans

Our outstanding accomplishment has been the elimination of peddling of sheet metal bids by the general contractors.

This is done by opening the sheet metal bids at our exchange previous to the submission of the general contract bids by the general contractors.

Tabulations of the sheet metal bids are mailed by our association to the architect or engineer and also to the general contractors bidding on the project.

The time of opening of these sheet metal bids is published in the daily local trade paper and in addition to this architects and contractors are invited to attend these openings by written invitation from our association.

Our association is highly regarded by the architects, engineers, contractors, bankers and bond companies and in fact is today on a par with the other business organizations and exchanges in our city.

This method of opening of bids has been in operation for four or five years and is so well understood by the general contractors as well as our members that it would be a difficult matter for them to do business in another manner.

Our membership has increased from just a few sheet metal firms to approximately sixty-two members and everybody seems to be well satisfied.

Jared A. Thiery,
Assistant Secretary.

▲ ▲

Toledo, Ohio

The last regular meeting of the Toledo Sheet Metal Contractors Association was held Wednesday, November 22, at which time the Furnace Committee reported on a very complete and satisfactory "Standard Methods Chart" on how to figure quickly and accurately the costs and selling prices on all new furnace installations.

The facts and figures used are, of course, all tentative until the National Code is adopted. The lack of a code seems to be our greatest drawback as it is quite hard to set any prices.

We also find that gentlemen's agreements on setting of prices will not work out without some kind of enforcement which we know will come when the code is finally approved.

A. K. Anderson,
Secretary.

▲ ▲

Ventilator Manufacturers

The Roof Ventilator manufacturers have perfected a National organization for all firms and persons interested in the manufacture, sale, distribution and installation of roof ventilators. The name of the new association is "The Roof Ventilator Institute." Credit for the accomplishment of this desirable combination belongs to W. F. Hirschman, whose untiring efforts have succeeded in welding together the dominant firms and individuals in this industry into an effective, although altruistic unit.

Membership is divided into two classes, an active and an associated class. The active members are the manufacturers. Agents, salesmen, engineers, ventilation contractors and others interested in roof ventilators are eligible for associate membership.

The objectives of the Institute are:

(1) To give full cooperation to the Governing Administration of our Country.

(2) To assist in the advancement of the roof ventilator science and industry, both as to design and application.

(3) To advance mutual aid and cooperation of the Institute members among each other.

(4) To support the high integrity of the industry.

(5) To exploit to the fullest extent the use of roof ventilators as manufactured, handled, or used by its members.

W. F. Hirschman has been elected president and Paul R. Jordan secretary. The mailing address of the Institute is 631 South Delaware St., Indianapolis, Indiana.

Paul R. Jordan,
Secretary.

▲ ▲

Texas

The Texas Sheet Metal Contractors Association has been making considerable progress in the formation of local organizations and the welding of these local associations into one aggressive state organization.

Meetings are being held by the local organizations with state officials attending wherever possible.

One of the most recent activities is the consideration of the establishment of the "Bulletin," former publication of the Texas Association.

It has been definitely decided to publish this "Bulletin," to be issued once a month, in 6 by 9-inch size. The first copy will be published about the first of 1934.

Harry Stanyer,
Secretary.

▲ ▲

Fulton County, New York

The month of November has been a busy month for the Fulton Co. Association.

On the 11th we held a banquet which was attended by about 85 contractors from central New York, also Mr. McDonald and Mr. Siersma of the Lenox Furnace Co. Mr. Siersma gave a talk on Warm Air Heating and Mr. McDonald on Air Conditioning. Also State Secretary Hesse was present and gave a talk on the Code.

We have taken Montgomery County into the association, and now it will be called Fulton and Montgomery Counties Association. Several contractors headed by Arthur Frydenburg and John Halleroff joined from Amsterdam. This association is eliminating the bootlegger jobber and manufacturer. There has been a committee appointed to confer with the city council and ask that the city draft an ordinance for warm air heating with a heavy license fee, an inspection and examination.

D. V. Quackenbush,
President.

▲ ▲

Maine

The State of Maine Sheet Metal and Roofing Contractors Association has been organized and the first meeting was held in Portland on October 26.

The announced purposes of the association are to promote the interests of the trade and deal with all problems that may arise by the adoption of the code when approved.

All established roofing and sheet metal contractors within the state are eligible for membership and are invited to get in touch with the secretary. Officers are as follows:

President, John Kirby, Portland.

Vice-President, Oscar Hahnel, Lewistown.

Vice-President, Thomas Skinner, South Portland.

Secretary-Treasurer, H. T. Halverson, 9-15 Union Street, Portland.

Directors: W. E. McBrady, Fred Tyler, Forest J. Jennelle, Wallace Demmons and N. C. Neilsen, of Portland, and John Knight of Westbrook.

Gravity exhaust VENTILATION

Ventilation For Bakery Heat Removal

By Paul R. Jordan

American Artisan,
Chicago, Ill.
Gentlemen:

We have a ventilating problem with which we want some help. The owner wants to spend as little as possible, but demands something that is practical and beneficial.

I am enclosing sketch of building. Please bear in mind that this building has a standing seam tin roof over "I" wood sheathing, there being no insulation at all. The office partitions run to the roof deck and is ceiled on the inside; the other part of the building has no ceiling at all. The storage room partitions run to the ceiling and is walled up to within three feet of ceiling joists. There are three 24 inch gravity ventilators on roof now, as you will note on plan.

The ovens in rear of building have and maintain a temperature of 550 to 600 degrees at all times. There is about 80 sq. ft. of window openings in the entire building and about the same of doors. They have two aeroplane type fans suspended from ceiling joist as noted on plan.

The temperature in summer is almost unbearable, but is comfortable in winter with heat from the ovens. Can this fault be overcome by gravity ventilation, if not what do you suggest in the way of fan and ducts?

We would like a rough sketch of what can be done, also the approximate cost of job installed. This job is for a bakery building.

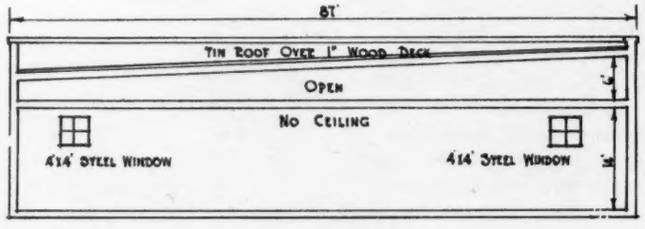
Very truly yours,

▲ ▲ ▲

IN order to analyze the conditions which must be rectified in this ventilation problem, it is necessary that we understand the factors which must be taken into account. For example, in industrial problems of this nature we must recognize that the number of air changes is highly important. Where heat is given off constantly, as in this bakery, more air changes are necessary than in some other types of businesses where heat may be generated slowly or intermittently.

For bakeries, eight air changes per hour are recommended by ventilation authorities. In order to get 8 changes an hour in this building you will have to show an air turnover of 751,680 cubic feet per hour. If the 24-inch gravity ventilators are well designed, manufactured rotary ventilators they are probably delivering around 40 per cent of this amount of air, but if they are poorly designed stationary ventilators, the possibilities are that they are not getting as much as 20 per cent of this amount. In any event,

(*Continued on page* 51)



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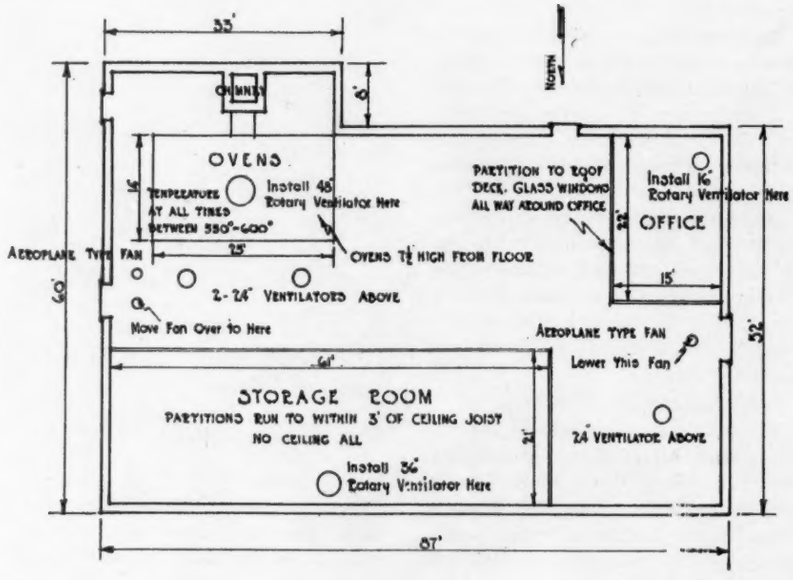


PLAN

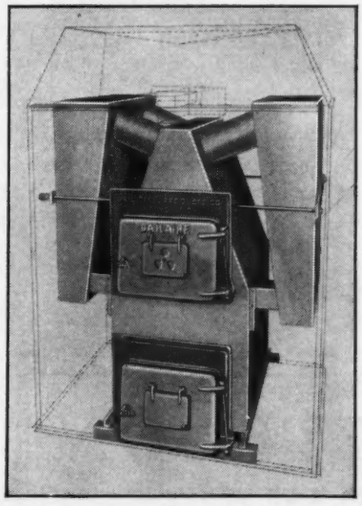
ORIGINAL LAYOUT IN CAPITAL LETTERS
Recommendations in Lower Case

New PRODUCTS

Coal Furnace

A new coal burning furnace, in a full size range and incorporating the Dail Steel Products features of large radiating surfaces, special flue construction, high efficiency and all-steel construction, is announced by Dail Steel Products Co., Lansing, Michigan.

The furnaces (series 200) have the Dail wedge shaped combustion dome,



the double radiators, telescope tube assembly, all welded construction of the oil burning furnace.

Another series, number 100, is also offered. This series has a square body, oval top, large rectangular rear radiator, and is low enough to permit a high plenum space above the body or for use in low basements. The fire box is square, with individual grate bars.

Literature has been prepared and will be mailed upon application.

◆

Rustproofer in Colors

A new rust-arresting and rust-preventing principle has been employed in a rustproofer recently put on the market. This material comes in liquid form and can be either brushed or sprayed over new or rusted metal surfaces. When applied to a rusted surface, the action of the liquid automatically welds this inert mass to the base metal and instantly the rust action is stopped. Further, a non-porous, moisture-proof, air-tight coating is formed that renders the surface immune to the attack of further rust deposit.

The original treatment can be made into a finish coat by a single application. Aluminum powder, powdered graphite, or dry red lead may be mixed with this new rustproofer and applied to rusted metal surfaces for dual effect. Rust action is permanently checked and admixtures give treated surfaces decorative finish.

The product, known as Stonhard Rustproofer, is manufactured by the Stonhard Co., 401 North Broad St., Philadelphia.

◆

Unit Conditioner

A new unit type conditioner designed for installation on the basement floor or hung from the first floor joists is announced by the Allweather Conditioning Co., 467 Calhoun St., Trenton, N. J.

The unit is supplied either with or without a refrigerating machine. Without refrigeration the unit will clean, humidify and circulate the air in winter and for cooling the same unit with the refrigerator will cool, dehumidify, circulate and clean.

The winter conditioner consists of a cabinet housing the filter section, the fan and motor and recirculating pump. The pump will recirculate 5 gallons of water per minute through sprays. The blower has a capacity of 500 C.F.M. A humidistat controls the sprays and the pump.

The unit can be installed with a furnace-fan system, but is primarily designed for radiator heated houses by connecting the unit with a return and supply grille located in some central position.

Literature describing the unit can be obtained from the company.

◆

Continuous Conditioning

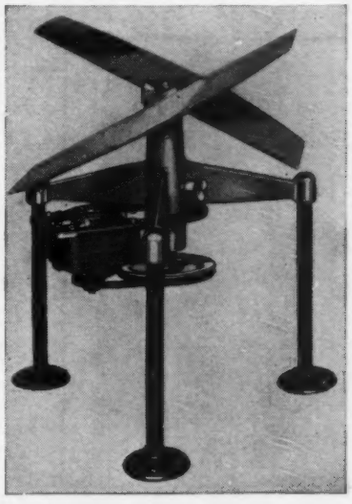
Multi-speed control, according to The Edwards Manufacturing Company, at Cincinnati, Ohio, in their HOT-KOLD winter air conditioning unit, is the first time that such a control has been incorporated as an integral part of the unit. This control, the manufacturers announce, insures continuous reconditioning of the air as it is always in operation at some speed. As the temperature lowers, the thermostat at stated degrees actuates the increase of the speed of the blower unit and the size of the burner flame. However, at low speed normal operation the air is being constantly cleaned, warmed, humidified and delivered to the upper rooms.

◆

New Russell Fan

A new fan, to be known as the Hold Heet Pressure Fan, is announced by the Russell Electric Co., 342 West Huron St., Chicago.

The fan, as the illustration shows, is a radical departure in design, which design the company claims is the result of many months of research work aimed at producing a fan which will provide good gravity flow, be quiet in



use, economical in running cost, and operate efficiently in the common ranges.

The fan in the 22-inch size has a free air delivery of 4,000 C.F.M. and is said to deliver 2,000 C.F.M. under .08 inch of water or 2,000 C.F.M. under a resistance of about 1/12 of an inch. The fan operates at 750 R.P.M. to secure this delivery. Three interchangeable pulleys are available for changing the fan speed.

Detailed description of the fan and its characteristics are contained in a leaflet which the company will mail.

Penn Humidity Control

According to an announcement the Penn Electric Switch Co., Des Moines, are now offering a new humidity control intended for operating small fans, valves, etc., in domestic or commercial service.

The control is attractively housed in a walnut brown molded bakelite case with an accurate thermometer on the face. An extremely sensitive and responsive element has been produced by winding a specially prepared paper strip around a corrugated spiral. One end of the strip is adjustable by means of a small tension screw, while the other end is fixed to the spiral.

By the method of mounting the paper element, all strain at high humidity or temperature is eliminated. At low humidity or temperature the design is such that the instrument is not thrown out of calibration. The instrument is accurate over a wide range and will retain its calibration even though subjected to extremes of humidity or temperature.

◆

Portable Air Conditioner

A new portable air conditioner unit, HUMEO Junior, has been placed on the market by Puffer Hubbbard Manufacturing Company, Minneapolis.

The new product is popularly priced and is sufficient to properly humidify a large room or a small apartment. It is silent in operation and consumes less current than the ordinary light bulb. The model operates by centrifugal force. The water is carried from the water reservoir to the atomizing ring in the cloud chamber by a centrifugal pump operated by a waterproof electric motor. The fan which operates on the pump takes air in through the back of the chamber, passes it through the water supply and cloud chamber, and then circulates it throughout the room. Its principle is such that no condensation is possible, regardless of the length of time it is in operation.

◆

Remote Temperature Indicator

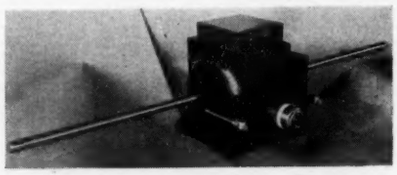
A unique instrument has been designed as a remote temperature indicator by which temperatures at several remote points, particularly in the home, may be determined. For instance, with this instrument, it is possible to read the temperature in the refrigerator, the outside air, various rooms, the garage, etc., all at one location. Low voltage is used between the instrument and the remote search coils, therefore permitting the use of ordinary bell wire. In operation, it is necessary only to plug the unit into a 110 volt, 60 cycle outlet and turn the dial switch in order to read the temperatures at the remote points. Westinghouse Electric & Mfg. Co., E. Pittsburgh, Pa. is the manufacturer.

◆

Long Shafted Motor

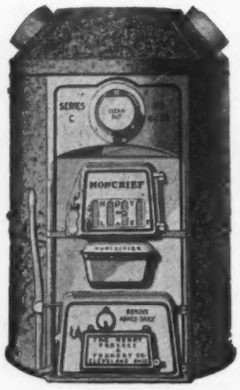
Equipped with an extremely long shaft for operating multiple fan units in air conditioning apparatus, this low speed fractional horse power motor makes possible an efficient design of the fan unit.

The motor is a special quiet operating, adjustable, varying speed, single phase A.C. capacitator type with resilient mounting that maintains the



shaft in a fixed position. An all metal resilient base that will retain its efficiency indefinitely, is provided.

The motor has wool packed bearings that require only infrequent lubrication and attention. Motor and control apparatus are self-contained. The Holtzer-Cabot Electric Company of Boston, Mass., is the designer and manufacturer.



Series "C"
Cast Furnace

BEAT COMPETITION with the MONCRIEF *Line*

With the complete Moncrief line you can meet every heating and air conditioning need. Moderate price, modern design, and all the latest features enable you to beat competition and make a good profit.

Write Today for the details.

When repairing Moncrief Furnaces use Moncrief parts. They fit properly, save you time and assure customer satisfaction. Original parts are labeled.

THE HENRY FURNACE & FOUNDRY CO.

3471 E. 49th St. Cleveland, O.

MONCRIEF

CAST FURNACES STEEL FURNACES GAS FURNACES

AIR CONDITIONING SYSTEMS

WE SUPPLY EVERYTHING USED ON A WARM AIR HEATING JOB

Series "S"
Steel Furnace

Ventilation (*Continued from page* 48)

it is certain that the air turnover is entirely inadequate.

The windows are too high to be of any value for intake purposes. It will be necessary to use the entrance doors at the front and rear for intake. It will be advisable to leave the doors open as much as possible into the storage room and into the office in order to provide intake.

Ventilator Size

The installation of a 48-inch rotary ventilator over the center of the oven will add 385,000 cubic feet per hour to the air delivery, bringing it up to nearly the necessary minimum. A 30-inch fan ventilator, installed at the same point, will handle 432,000 cubic feet per hour. Either the 48-inch rotary or the 30-inch fan ventilator will be very practical. It will be necessary, however, in case the fan is used to have the motor checked carefully against the slightest overload, to make sure that it will not burn out on account of being installed in such a hot place.

The airplane fan near the oven is installed in the wrong place. It should be installed directly in front of the door as near the door as possible and as low as possible. The airplane fan near the front entrance also should be installed as close to the entrance as possible and as low as possible. If this type of fan is placed high, it simply pumps hot air down on the people below.

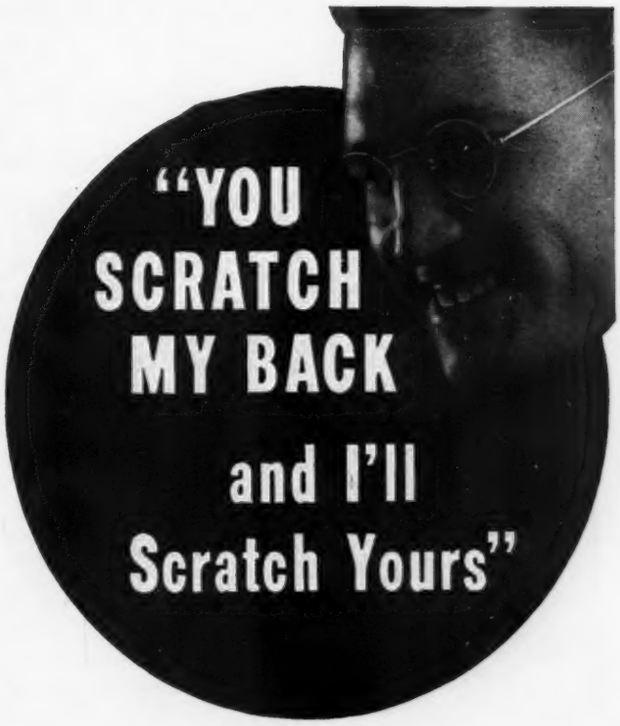
If conditions are bad in the storage room, one 36-inch rotary ventilator installed near the wall at approximately the center will give them the necessary air turnover. This 36-inch rotary ventilator in conjunction with the 48-inch will bring the total air turnover up to about the minimum that should be handled.

If the office ceiling is nailed to the roof rafters, a 16-inch ventilator should be installed in the roof of the office. If the ceiling is down below the rafters so that there is a roof space in between, and this roof space is open to the rest of the building, a ceiling register totaling approximately 300 square inches in area will answer.

Oven Heat

There is bound to be a great deal of radiant heat come from the side of the ovens. This can be eliminated by the use of shields or screens. Any kind of a screen between the ovens and the workers will take care of this situation. These screens need not be over 6 feet high and can be of the ordinary portable type. Where high trucks or crates are used for handling the products, these crates, if left standing around the oven, will shield the workers to a considerable degree.

The unceiled roof naturally accounts for a great deal of radiant heat. This can be eliminated by putting in a ceiling, in which case the ventilators should open directly into the roof space. Openings of ample area must be left in the ceiling so that the hot air will be taken into the roof space and thence exhausted out through the ventilators. These openings will be located where the ventilators are now shown and the ventilators



"I DECIDED when I started in this sheet metal contracting business that I was going to buy materials only from those manufacturers or distributors who helped me sell. 'You scratch my back and I'll scratch yours'—that's the idea. Armco, I want to tell you, has always done just this. They supply me iron that is always good, uniform, easy-working and rust-resisting. They keep telling my customers and prospects why they should buy Armco INGOT IRON, through strong national advertising. My distributor delivers on the dot. And they help me sell it in all sorts of ways, out on the front line, where the going is often pretty tough. My vote, my orders, go to Armco. They help me make money."

THE AMERICAN ROLLING MILL COMPANY

Executive Offices: **MIDDLETOWN, OHIO**

ARMCO

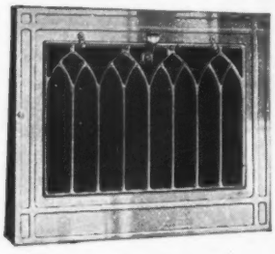
SHEET METALS *Create Profits* **out of Customer-Satisfaction**

Every month "Ingot Iron Shop News" offers you ideas and suggestions on how to increase sales, cut costs, and turn out work that satisfies customers. Published for ambitious contractors by the Armco Distributors' Association. Write for your free subscription.

H & C--Symbol for The Finest Register for Every Type of Job

Quality counts these days as never before. That's why it's so decidedly the part of wisdom to standardize on a line which assures you the finest register for every purpose. Compare the H & C line with any other. You'll find it offers wider selection, better designs, and each register incorporates finer workmanship, greater air capacity, and superior mechanical features. Standardize on H & C. It pays.

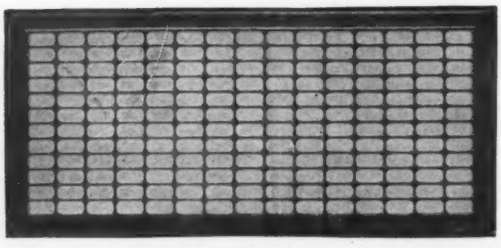
Leading Jobbers Carry Complete Stocks



No. 110

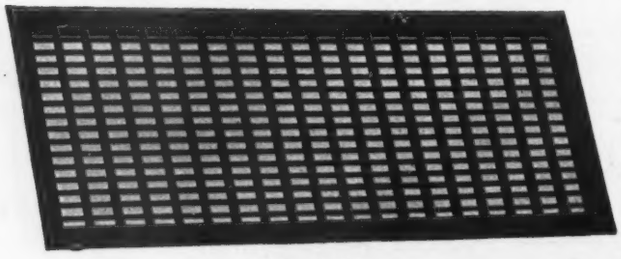
By considerable odds the most popular baseboard register made. You're not limited to this style alone, however, when you standardize on H & C. There are two other attractive designs from which to choose, with full lines of sidewall registers and cold air returns to match.

Two Types of Steel Cold Air Faces Assure Pleased Customers and Most Advantageous Installations.



No. 255

Certainly the finest pressed steel cold air face by any comparison. Our famous pinched-back fretwork affords free air capacity averaging 10% greater than other faces of this type. Check this statement and see for yourself.



No. 265

"NO-FLEX"—An improved grid construction Cold Air Face. Particularly suitable for installation with single flooring. Available in all sizes in medium and medium dark oak and all other standard finishes.

HART & COOLEY MFG. CO.

CAST AND STEEL H&C WARM AIR REGISTERS

GENERAL SALES OFFICE 61 W. KINZIE STREET, CHICAGO

New York, 101 Park Ave. Boston, 6 Beacon St.
Philadelphia, 1600 Arch St. New Britain, Conn., Corbin Ave.

can be placed at the high edge of the roof. No ducting will be necessary. While the cost of a ceiling may be too great, a ceiling is the only way to eliminate radiant heat from the roof under conditions such as these.

To summarize the changes—

(1) Use doors for intake.

(2) Install one 48-inch rotary ventilator, or one 30-inch fan ventilator over the center of oven.

(3) Move airplane fan near oven over to entrance door.

(4) Install airplane fans as low as possible.

(5) Install one 36-inch rotary ventilator above storage room.

(6) Install one 16-inch rotary ventilator in office, if needed.

(7) Shield ovens if possible.

(8) Keep doors open if possible.

(9) Ceil room if possible, leaving openings in ceiling.

Cleaning Advertising

ONE progressive contractor, J. H. Zimmerman of Beloit, Wisconsin, has used some effective newspaper advertising during the past year. On the advertisement published, seven helpful hints for the home owner to observe in taking care of his furnace are listed.

Save 1/3 Coal

Be Clean and Warm Every Winter
Have Your Furnace Vacuum Cleaned

HELPFUL 7 HINTS

1 Saving ⅓ of your winter's coal—would you like to save that? The heat of the coal travels through clean iron but this heat is stopped when the iron is covered with furnace soot.

2 Stuffing a furnace with coal is no remedy, so why do all this shovelling and useless hard work?

3 Shaking grates and crowding on the coal will spoil the best of furnaces and it wastes the coal—a lot of extra ashes too—expensive, dirty and hard work.

4 A clean furnace means a clean house. If we clean your furnace now, you will know it's clean and ready for cold weather. Enjoy this now.

5 Many residence fires are caused by clogged furnaces, pipes and leaks—reduce the hazard of fire in your home.

6 Cleaning down inside the registers and inside the pipes and on top of the pipes in the basement is part of this service. Protect the health of the family by getting rid of dust and germs.

7 Dust spoils wallpaper, paint, soils windows, spoils rugs, curtains, furniture and clothing, and costs much every year in added cleaning and it means no end of hard work.

CHURCH WORK DONE FREE

J. H. Zimmerman

Heating, Plumbing and Sheet Metal Work
631 Fourth St. Phone 10

This firm's advertising has stressed the fact that all church work will be done free. This has secured much good will for the firm, many church members in appreciation giving it their cleaning jobs.

News Items . . . . . .

Armco On the Air

The Armco band, veteran musical organization of the skyways, joined the Blue Network of the National Broadcasting Company on Friday night, November 10, at 10 o'clock, E. S. T. Under the direction of its nationally famous conductor, Frank Simon, the Armco band has completed four successful seasons of broadcasting, and begins its fifth season with an augmented audience of radio listeners.

The broadcasts are known as the "Armco Ironmaster" programs, because they are presided over by a genial character known as the Ironmaster, who not only announces the program but presents to the vast chain audience some interesting glimpses of the iron and steel industry.

This character is filled by Bennett Chapple, Vice President and Director of Publicity for the American Rolling Mill Company, and known throughout the sheet metal industry.

The programs will be heard every Friday night at the same time.

◆

New Inland Representative

Fred E. Bynum of Oklahoma City, Oklahoma, has been employed by the Inland Steel Co., Chicago. He will be affiliated with the St. Louis office of the Inland Steel Co. and will sell the company's products in the states of Oklahoma and Arkansas. Mr. Bynum was formerly associated with the Gulf States Steel Co.

◆

Revere Advances R. G. Scott

C. D. Dallas, president of Revere Copper and Brass Incorporated, has announced the appointment of Robert G. Scott as a vice president of the company, in charge of the Taunton-New Bedford Division, with headquarters at Taunton, Massachusetts.

Mr. Scott has been associated with Revere Copper and Brass Incorporated since its inception in 1929 and was previously connected with the Rome Brass and Copper Co. and Baltimore Copper Mills, both of which are now part of Revere.

The Taunton-New Bedford Division operates mills in Taunton and New Bedford, Massachusetts, and serves the New England area. It dates back to America's first copper rolling mill at Canton, Massachusetts, which was established by Paul Revere, famous Revolutionary patriot, in 1802.

◆

Snyder Talks on Stainless Steel

"Industrial Uses of Stainless Steel" was the title of a talk delivered before a meeting of the American Society of Mechanical Engineers at Cincinnati, Ohio, November 23, by C. C. Snyder of the Central Alloy Division, Republic Steel Corp., Massillon, Ohio. Prefacing his address with a brief history of the development of stainless steel, Mr. Snyder then divided the present large number of different types of stainless steel into the proper main groups, giving their general characteristics and properties.

The latter part of the talk stressed the rapidly increasing use of stainless steel in various industries, such as building, meat packing, brewing, automotive, and the chemical and allied industries. Lantern slides were used to illustrate a number of typical installations of Enduro Stainless Steel.

VICTOR HEAT BOOSTER

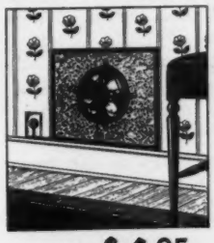
ONLY $5.95 LIST

Cold Rooms Banished Forever!

HERE'S HOW IT WORKS

FLOOR TYPE

A SPECIAL MODEL FOR WALL TYPE REGISTERS



only $6.95 LIST

HERE is a positive cure for any "cold room." The Victor Booster will overcome all the difficulties that cause poor delivery of heat. All it requires is a fire in the furnace—regardless of conditions the Victor Booster will make it cozy and cheerful.

Quick, Easy Sales

Every furnace-heated home needs this modern invention. You can use it to make some sweet profits right now. A short, fast demonstration right in the prospect's home will instantly convince them; and you not only make money, but their satisfaction with the Booster will assure you many new friends.

Fully Guaranteed!

You can't lose. The Victor Heat Booster is fully guaranteed and all it requires is a chance to sell itself. Hundreds of wide-awake furnace men are cashing in on this amazing profit builder this season. Get your share—mail the coupon below for your samples or for more complete information *right now!*

MAIL THIS COUPON TO-DAY!

VICTOR ELECTRIC PRODUCTS, INC.
702 READING ROAD, CINCINNATI, OHIO

Gentlemen; We want to see what profits we can make with your Victor Booster. Kindly follow our instructions indicated below.

☐ Our check in this square means we want you to ship us a set of samples (one each of both types) of your Victor Heat Booster.

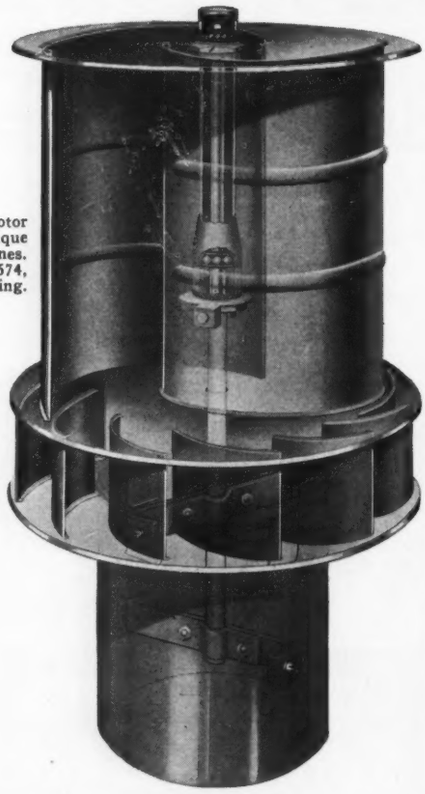
☐ Our check in this square means we want more information from you before we order our samples.

Name .....

Address .....

Name of Jobber .....

NOTE: Dealer discount on Victor Heat Boosters is 25% from list. Direct purchases accepted on C. O. D. basis.



Phantom View S Rotor Ventilator. Note unique construction of vanes. U. S. Patents 1,697,574, 1,766,765; others pending.

"S" ROTOR VENTILATOR

and SMOKE COWL

"ALWAYS WORKING"

POSITIVELY EFFECTIVE and "ALWAYS WORKING" under the most adverse conditions; two impressive characteristics of the new S Rotor Ventilator which finds ready sale wherever ventilating problems arise. Quick profits for the Contractor result.

The exclusive features of this ventilator—Positive Action at all times and Greater Suction power than any wind driven ventilator are quickly appreciated by plant-engineers, building superintendents and property owners in general.

POSITIVE ACTION—heat, cold, rain, sleet, snow or ice cannot interrupt its constant action and it remains unaffected by the chemical action of smoke, gases or fumes so destructive to ordinary ventilators.

GREATER SUCTION—No other type of wind driven device will ventilate as quickly or efficiently as the S Rotor Ventilator. This is due to its unique patented construction.

The ventilator is made of the finest materials, Parkerized and painted to resist corrosion and will last indefinitely. It rotates, silently on S K F ball bearings. The smoke cowl is always positive in action, absolutely increases draught and eliminates back draughts.

Dealers and Contractors are finding new business with this unusual ventilator and territorial franchises are still available in certain districts. Write today for more complete information.

UNITED STATES VENTILATOR AND POWER CORPORATION

Sole U. S. Licensee :::: *Savonius Patents*

184 SUMMER STREET BOSTON, MASS.

Soon To Be Issued

In a short time, F. Meyer & Bro. Co. ("The HANDY Pipe People") will issue the best and most complete catalogue and guide on forced-air duct-work and allied construction.

If you are interested and wish to be sure to receive a copy when it is off the press, send your name and address now and you will get one of the first copies.

This type of work will loom larger and larger in your business in the future.

Meanwhile We Wish Every Reader of American Artisan

A Very Merry Christmas and Increased Prosperity Next Year

•

F. Meyer & Bro. Co.

PEORIA ILLINOIS

News Items . . . . . .

Otto Goebel Dies

Otto Goebel of Syracuse, treasurer of the New York State Sheet Metal and Roofing Contractors' Association died unexpectedly at his home on Saturday, November 11.

Mr. Goebel has been an outstanding figure in the Sheet Metal Contractors' Association, in Local, State and National affairs for nearly thirty years. He was one of the organizers of the Syracuse Association in 1905 and was one of the founders of the National Association in Philadelphia in 1907 of which he had been Secretary and Treasurer. He helped organize the New York State Association and was treasurer of it at the time of his death. Mr. Goebel was enthusiastic, reliable and unquestionably honest. He made many friends among the sheet metal contractors all over the United States and was looked up to and respected by them all.

◆

Death of William H. Abbott

William H. Abbott, Vice President of the Wheeling Steel Corp., died on Wednesday, October 25, at the age of 58.

Despite poor health, Mr. Abbott has been active in his company's affairs up until his fatal sickness. Mr. Abbott has been identified with the roofing and sheet metal industries practically all his business life. He began his work with Wheeling in 1898 as a salesman, shortly becoming manager of the New York branch and later assistant secretary of the Wheeling Corrugating Co. When the Wheeling Steel Corp. was organized Mr. Abbott was elected president of the sales agency—Wheeling Steel Products Co.

Mr. Abbott was very active in the affairs of the National Association of Sheet and Tin Plate Manufacturers and the Association of Flat Rolled Steel Manufacturers.

◆

Inland West Coast Distributor

Inland Steel Company, Chicago, announces that A. M. Castle & Company, Chicago, have been appointed their exclusive sales representatives on the Pacific Coast, and will handle the sales of the Company's products through their Los Angeles, San Francisco and Seattle offices.

◆

Intricate Steel Applications

The new railway station at Hamilton, Ontario, Canada, is attracting attention from architects and builders in both Canada and the United States because of the successful application of steel in the interior finishings of the building.

The wainscot, doors and frames, counter grilles, column coverings and walls are all steel. The walls are of No. 12 gauge steel, finished in baked enamel of a deep terra cotta color. The column coverings are also of steel, finished in bright aluminum enamel. All fastenings are concealed, and where two sheets of metal join, a small sunken hand moulding is used at the joint. Curved walls and trim, extremely difficult to execute in steel, have here been handled successfully. Due to the heavy gauge of the metal used, there are no rolls and buckles which were so characteristic of light gauge metal when used in large sheets.

While the conception of steel as a wall covering is not new, the Hamilton station is one of the first comprehensive installations of its kind and has aroused wide interest and comment.

Perforated Metals
for every requirement
Steel, Brass, Bronze, Copper, Monel
Aluminum, Stainless Iron, Zinc
or any other metal
PERFORATED TO YOUR ORDER
Round holes from .020" to 7" Diam.
Oblong and Slot holes from .008" to 3" wide.
Grilles of distinction for fine buildings
Everything in Perforated Metal
THE HARRINGTON & KING PERFORATING CO.
5649 FILLMORE ST., CHICAGO, ILL., U. S. A.
NEW YORK OFFICE, 114 LIBERTY ST.

They Beautify Any Room

Those customers of yours who have experienced the expense, inconvenience and humiliation of cracked and fallen plaster ceilings will *welcome* your recommendation to replace these with Canton Steel Ceilings. With Canton Steel Ceilings installed they are assured of permanent trouble-free ceilings. It is also important to the homeowner that Canton Steel Ceilings actually *beautify* the rooms.

CANTON *Steel* CEILINGS

Canton Steel Ceilings are sold through leading sheet metal jobbers in the United States.

CANTON STEEL CEILING CO., Canton, Ohio
Warehouse Service: 497 West St., New York, N. Y.

Mallet Boss

A More Practical Tapping Tube

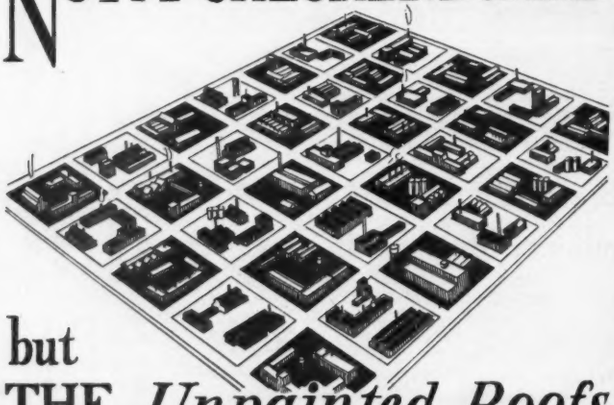
THE new Central tapping tube, shown here assembled with Central tap, has a valuable feature. No longer is it necessary to strike the tube off-center when driving it in. The Central tube provides a heavy mallet boss for this purpose which keeps the blow in line with the tube and prolongs the life of the cock.

Write for Catalog C, which shows the complete Central line of Beer Faucets, Water Faucets, Taps and other high quality Bar Fittings.

CENTRAL BRASS MFG. CO.
2953 East 55th St., Cleveland, O.

CENTRAL
•Quality Fittings•

NOT A CHECKERBOARD



but THE *Unpainted Roofs* IN YOUR COMMUNITY

IN every community, there are any number of sheet metal roofs which must be painted at regular intervals in order that they adequately protect the buildings they cover. This is profitable business that sheet metal men frequently fail to take advantage of.

The way to most profitably work this business is with Thompson's "370 SPECIAL RED." This paint is outstanding because it has passed every quality test. Pure Red Lead, the best rust preventative known for metal, genuine imported Spanish Sesqui-Oxide of iron, highest grade Raw and Boiled Linseed Oil, just enough drying oils to give the proper set up—all go to make up a paint for sheet metal roofs that never gives cause for come-back or complaint.

Other Thompson Products are Alumbrite, the new Aluminum Paint for Wood and Steel and Lin-o-Jap, the Perfect Reducing Oil for all Paint.

THOMPSON & COMPANY
P. O. Box 557, N. S. PITTSBURGH, PA.

YOUR *big market* TODAY

ARE you taking fullest advantage of the repairing, remodeling and replacement market which exists in your locality today? It's a real live market and represents profitable business to the sheet metal contractor who goes after it. Your Viking Shear will prove your greatest asset in the handling of this work. Because it cuts quickly and accurately your Viking Shear will help you cut your time costs down to the minimum.

Viking Shear Co., Erie, Pa.

THE VIKING SHEAR

News Items . . . . . .

Enlarge Peerless Activities

The Peerless Electric Company, Warren, Ohio, announces that, due to the increase in volume of orders for ventilating fans and blowers, it became necessary to separate this business from the Motor Division and form the Fan and Blower Division with William S. Kingsbury, sales manager. Mr. Kingsbury formerly was in charge of all research and designing in this department.

Their new catalog will show a much enlarged line of variable speed, direct connected Duplex Blowers with four sizes: 975 C.F.M., 1200 C.F.M., 2200 C.F.M., 3600 C.F.M. All Duplex Blowers are complete with Dustop filters and Peerless 110/220 volt, variable speed controller.

They also announce a new line of belt driven blowers for those who prefer this type: 1000 C.F.M., 2250 C.F.M., 3200 C.F.M., 4200 C.F.M. All belted blowers are in 14-gauge welded steel cabinets with high torque, low starting current capacitor motors, which are approved by power companies for long hour service. No split-phase motors are used on any of the new Peerless fan and blower lines. Motor is concealed within blower case out of sight and where children cannot be injured by coming in contact with pulleys or belts. Blower wheels are carried in rubber mounted, self-aligning bearings.

Full particulars and prices may be secured by writing to Fan and Blower Division, Peerless Electric Co., Warren, Ohio.

◆

National Warm Air Register Institute

The name of the National Warm Air Register and Metal Grille Institute has been changed to National Warm Air Register Institute, according to Allen Williams, secretary.

◆

Traveling Display Creates Interest

An up-to-date version of bringing the mountain to Mahomet when Mahomet won't go to the mountain has been developed by the Perfection Stove Company, Cleveland, in connection with the sale of its Superfex Oil-Burning Furnace with air conditioning equipment.

An especially constructed and outfitted trailer attached to a salesman's automobile has a complete Superfex outfit installed ready for an operating demonstration at a moment's notice.

As shown in the illustration the trailer is well identified on sides and back by large lettered inscriptions. The name of the product and the high spots of its performances are prominently shown. When a trailer reaches a town it is first parked on a prominent parking lot so that all persons interested in heating equipment may investigate and learn the merits of a Superfex installation.

WHITNEY LEVER PUNCHES

No. 4B PUNCH

Length—8½ inches. Capacity ¼-inch through 16 gauge. Deep Throat—2 inches. Weight—3 pounds. Punches and Dies—⅛" to ⅜" by 64ths.

No. 6 PUNCH

Length — 26½ inches. Capacity — ¼-inch hole through ⅜-inch iron; especially adapted for button punching or templet work. Punches and dies ¼" to ⅜" by 32nds.

No. 91 PUNCH

Capacity — ⅝-inch hole through ¼-inch, 1-inch hole through ⅜-inch and 2-inch hole through ¼-inch iron. Depth throat 5-inches. Weight — 82 lbs.

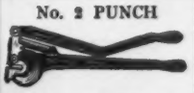
We have tools for every purpose needed by Sheet Metal Contractors.

Ask your Jobber

No. 1 PUNCH

Length — 34 inches. Capacity — ⅜-inch hole through ¼-inch iron. Punches and dies in sizes from ⅛ to ⅜ by 64ths.

No. 2 PUNCH



Length — 23 inches. Capacity — ⅜-inch hole through ¼-inch iron. Punches and dies in sizes ⅜-inch to ½-inch by 64ths.

CHANNEL IRON PUNCH

Companion to No. 2 Punch. Every part of the two Punches Interchangeable, including punches and dies. Capacity — ¼-inch hole through ¼-inch iron.

W. A. WHITNEY MFG. CO.
636 RACE ST. ROCKFORD, ILL

THE GOLDEN STAR FURNACE

THE J. M. & L. A. OSBORN CO.
DISTRIBUTORS
Detroit - Cleveland - Buffalo

FURNACES

Furnace Pipe—Wall Pipe and Fittings

ALSO

Air Conditioning Specialties

The **ROBINSON** *Heat Distributor*

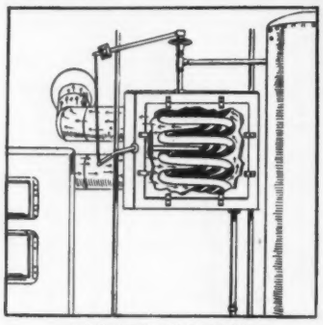
EVERY FURNACE HEATED HOME A LIVE PROSPECT

Patented

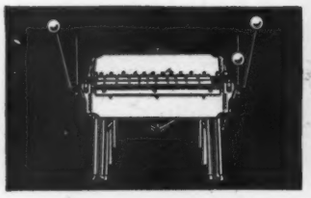
With the Robinson Heat Distributor installed, the heating plant becomes far more effective in its distribution of heat, moving a substantially greater volume of warm air through the system. Home owners want the comfort and convenience which the Robinson Heat Distributor provides them . . . and there is a worthwhile profit in every installation. Write for details.

ROBINSON HEATING & VENTILATING CORP., Massilon, Ohio
Manufacturers of Warm Air Heating, Ventilating and Air Conditioning Equipment

RYERSON
IMMEDIATE SHIPMENT FROM STOCK
More than twenty kinds of prime quality sheets are carried in stock. There is a special sheet for every purpose. Also Bars, Angles, Rivets, Bolts, Tools and Metal-Working Machinery.
Write for Journal and Stock List
JOSEPH T. RYERSON & SON INC
CHICAGO DETROIT MILWAUKEE ST. LOUIS JERSEY CITY CINCINNATI BUFFALO CLEVELAND PHILADELPHIA BOSTON
SHEETS


PATENT PENDING
MARCUS
Smoke Stack
Water Heater
Supplies hot water from a warm air furnace. Utilizes the waste heat that goes up the chimney. Has an automatic control which assures an even temperature of the water.
Agents Wanted
MARCUS WATER HEATER
40 Paterson Plank Road, Union City, N. J.

FURNACE & BOILER REPAIRS
GRATE BARS AND RESTS, FIRE POTS, FEED SECTIONS, FIRE BRICK, ETC.
IN STOCK . . . READY FOR IMMEDIATE SHIPMENT
A.G. BRAUER SUPPLY CO.
312-18 NO. THIRD ST. . . . ST. LOUIS.

CHICAGO

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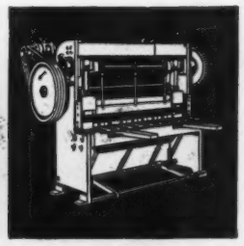
Power Squaring Shear
STEEL BRAKES—PRESSES—SHEARS
DREIS & KRUMP MFG. CO.
7404 LOOMIS BLVD. CHICAGO

News Items . . . . . .

F. Meyer & Bro. N. R. A. Float

On the night of October 27, Peoria held its N.R.A. parade and demonstration, as many other cities have done. One of the real features of the parade is pictured here—it was conspicuous enough that the radio announcer broadcasting the description of the passing parade made special mention of it.

But there is one thing that isn't conspicuous—except by modesty. Mr. George Harms tells us that, the "150%"

given as the increase in payroll really should have been "180%," but that he didn't want to arouse any skepticism in the throngs who lined the streets, so he "shaved" the actual figure.

The Meyer Furnace Co. was also represented in the parade, which attracted thousands of people to Peoria's business district that evening.

◆

W. M. McDonald Becomes Jobber

Word comes from W. M. McDonald, 121 North Third St., Quincy, Illinois, that in June he started in the wholesale stove, furnace and refrigerator business for the trade located in the territory adjacent to Quincy.

In addition to jobbing stoves, furnaces and refrigerators, he states he has gradually expanded to fabricating oak heaters, laundry stoves and low-priced, four-hole cooks. Prior to entering this venture Mr. McDonald was associated for twenty-six years with a Quincy stove and furnace organization, and at the severance of his relations was an officer.

"FABRIKATED"
COLD AIR FACES
Floor Registers
Forced Air Registers
82% OPEN AREA
ANY SIZE . . . ANY FINISH
May we send Catalogue?
INDEPENDENT
INDEPENDENT REGISTER & MFG. CO.
3741 East 93rd Street . . . Cleveland, Ohio

New Literature . . . .

Zinc Planning, Making, Selling

A new booklet done in several colors and elaborately designed has been prepared by New Jersey Zinc Co., showing by pictures and text some of the many everyday uses of zinc.

The makeup of the booklet is interesting, with artistic photographs of products using zinc and the interesting manner of presenting the information on present-day applications of zinc and its alloys. Dozens of everyday items are shown and interesting histories of the adoption of zinc to these products are related.

For anyone interested in the history of this old material as adopted in present-day alloys the booklet should prove instructive and interesting. The New Jersey Zinc Co. will mail a copy to anyone requesting it.

◆

Stoker Booklet

The Will-Burt Co., Orrville, Ohio, will mail to any interested contractor a copy of their new consumer booklet describing the application of the company's stoker to the usual forms of domestic heating plants.

The booklet explains the features of the stoker, gives some of the advantages of stoker heat, points out the special features of operation and design, furnishes some typical letters of commendation, and shows cut away and installation photographs of the points mentioned.

◆

Fan Catalog

International Engineering, Inc., Dayton, Ohio, has issued catalog No. 22, describing the company's line of square frame fans, round frame fans, multi-blade fans, extension shaft fans, pent houses, shutters, etc.

Each section of the catalog gives complete descriptions of the unit. Specifications and prices are shown in tables accompanying each type of fan. All of these fans are propellor type, multi or single bladed, with several types of frames. The fans come in sizes suitable for most

◆

Machine and Tool Bulletin

Ward Machinery Co., 564 West Washington Boulevard, Chicago, have issued bulletin "S" covering lists and prices of punches, dies, rivets, bolts, screws, hand tools (such as rivet sets, groovers, mallets, hacksaw blades), shear parts, snips, hammers, awls, dividers, slater's tools, soldering supplies and the various shop machines handled by the company.

A copy of the bulletin will be mailed any contractor requesting one.

◆

Industrial Advisers Appointed

The Industrial Advisory Board announced on October 19 the appointment of industrial advisers for hearings on various codes of industries. Among the advisers appointed was W. W. Hill, of the Fox Furnace Co. of Elyria, Ohio, for the Warm Air Furnace Manufacturing Industry.

For Registers
Specify WATERLOO
with
no "wing" interference
Illustrated Catalogue on Request
THE WATERLOO REGISTER CO., Waterloo, Ia.
Also 2211 First Ave. Seattle, Wash.
DIFFUSER

BEER
FAUCETS
for
immediate delivery
THE GLOBE BRASS MFG. CO.
2925 E. 55th St. CLEVELAND, OHIO

Install
ÆOLUS
Improved
VENTILATORS

FOR industrial buildings, schools, homes, theaters, etc. Made in 14 different metals. Constant ventilation—no noise—no upkeep.
ÆOLUS DICKINSON
Industrial Division of Paul Dickinson, Inc.
3332-52 South Artesian Avenue
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The
AKRON Air Blast FURNACE
●
The
SOLID COMFORT FURNACE
●
THE
PIPE AND ATH-A-NOR PIPELESS
FURNACE
● The MAY-FIEBEGER Company, Newark, Ohio ●

OLD TRADITIONS
of Superlative Living

AWAKE
again in the
Newly Modernized

AUDITORIUM HOTEL

The luxury, the comfort, and the elegance that our fathers loved are yours today in the famous Auditorium Hotel.

Here, in these halls and in these rooms where the great of a quarter century have trod, you can enjoy the distinction of yesterday and the modernity of tomorrow.

Unrivalled in location, facing the blue of Lake Michigan, rich in traditions, and eager to serve, the Auditorium offers large, luxurious rooms from $1.50 single without bath and rooms with bath from $3.00 single. Double from $5.00

Write for illustrated colored folder
ARTHUR J. NEWMAN, *Manager*

MICHIGAN AVENUE AT CONGRESS STREET

CHICAGO

New Literature . . . .

Code for Air Conditioning Systems

The Fox Furnace Co., Elyria, Ohio, has prepared a small booklet covering a simplified code and installation rules for air conditioning systems.

In order, the booklet defines a trunk line system, gives rules for determining sizes of ducts and registers, lists a step by step procedure for preparing a design, gives examples of typical calculations, discusses the several types of supply systems, supplies rules for different problems such as remote rooms, dampers, replacement work, and shows several easily applied charts which reduce calculations.

A copy of the simplified code can be obtained by writing the company.

The booklet is not intended for the advanced forced air contractor, but for anyone beginning in this class of work the rules set down serve as a guide to practical procedure and will serve for all ordinary buildings.

◆

Dealers Cost Sheet

Grant Wilson, Inc., announces his price sheet as of October for all sizes of roll asbestos paper, also sheet asbestos, tape and corrugated paper. Contractors wishing the latest price list should write the company.

◆

Chromium Steels Booklet

A new booklet, "New Enduro 4-6% Chromium Steel," has been prepared by Republic Steel Corp., covering the history, development, characteristics, fabrication, and composition of the company's chromium steel.

In detail the history of the development of this material is discussed and a complete analysis of the properties of the product is given. The text explains how these properties are affected by conditions of service. Particular attention is given the use of this material in the oil industry or any similar process requiring resistance to high temperatures.

Excellent information is given on the rolling, forming, forging, annealing, pickling, welding of the material.

A copy of the booklet will be mailed by the company to any contractor who requests one.

◆

Instructions for Arc Welding Copper

Arc welding copper to copper and copper to steel is the subject of a new 12-page booklet just released by The Hobart Brothers Co., Troy, Ohio, manufacturers of arc welding equipment.

It contains detailed instructions for applying their newly developed "Long Arc" method, said to be the first practical method of arc welding either electrolytic or deoxidized copper with strength equal to that of annealed copper. The originators claim that tests have shown strengths after welding of 30,000 to 34,000 pounds.

The procedure is said to give speed, ductility, strength and freedom from warpage.

The instructions contained in this booklet are so detailed that any competent operator who will follow the instructions, using suitable equipment, requires only a little practice to become proficient in welding ordinary copper with highly satisfactory results.

The booklet, known as Bulletin No. D7, is free to anyone who is in any way interested in fabricating copper.

CLASSIFIED ADVERTISING

4 cents for each word including heading and address. Count seven words for keyed address. Minimum $1.00 for each insertion. One inch $3.00. Cash must accompany order. Copy should reach us eight days in advance of publication date.

SITUATIONS OPEN

OPPORTUNITY: WE NEED FIRST class salesmen and manufacturers' agents to represent us on the sale of Only Original Soot Destroyer and Boiler-Aid in all open territory. Attractive proposition to the right men. Saginaw Salt Products Co., Saginaw, Mich.

SITUATIONS WANTED

SITUATION WANTED: SHEET METAL plumbing and heating man wants steady job. Can go to work at once. A-1 references. L. C. Hughes, Brett, Iowa.

WANTED TO HEAR FROM SOMEONE who can use a radiator repairman and acetylene welder. Can also do tin work. Will go anywhere. Married and steady worker. Address Key 258, "American Artisan," 1900 Prairie Avenue, Chicago, Illinois.

WANTED TO BUY

WANTED—GOOD SECOND-HAND THIRTY-inch bar folder. Give best price and condition. Address E. E. Walty, Box 145, Colchester, Illinois.

MAILING LISTS

Pave the way to more sales with actual names and addresses of Live prospects.

Get them from the original compilers of basic list information—up to date—accurate—guaranteed.

Tell us about your business. We'll help you find the prospects. No obligation for consultation service.

60 page Reference Book and Mailing LIST CATALOG

Gives counts and prices on 8,000 lines of business. Shows you how to get special lists by territories and line of business. Auto lists of all kinds. Shows you how to use the mails to sell your products and services. Write today.

R. L. POLK & CO.
Polk Bldg.—Detroit, Mich.
Branches in Principal Cities
World's Largest City Directory Publishers
Mailing List Compilers. Business Statistics. Producers of Direct Mail Advertising.

FOR SALE

FOR SALE
Newton Hickory Mallets
Designed for metal workers
Balanced and can be used without wrist strain
●
Cortland Hickory Handles
All sizes and weights
●
Send for complete price list
WARREN HANDLE WORKS
CORTLAND, OHIO

FOR SALE: AUTO RADIATOR AND welding shop in one of the best Arkansas towns of 8,000 population. Address Key 256, "American Artisan," 1900 Prairie Avenue, Chicago, Ill.

FOR SALE: One 30" SQUARING SHEAR: one 30" forming rolls; one 48" forming rolls; one 30" bar folder, all at a bargain. Address Key 257, "American Artisan," 1900 Prairie Ave., Chicago, Ill.

FOR SALE: IN WISCONSIN CITY OF 4,000, first class sheet metal and heating shop. Price right. Rent reasonable. Address Key 254, "American Artisan," 1900 Prairie Ave., Chicago, Ill.

FOR SALE: ONE 10 FT AND TWO 8 FT. brakes, 18 gauge capacity; One 4 ft. power roller and one 30" squaring shears. Address Key 255, "American Artisan," 1900 Prairie Ave., Chicago, Ill.

FOR SALE

A RARE OPPORTUNITY

Firm actively engaged in the manufacture of approved oil burners is offering for sale its patterns, equipment, etc. Will sell at reasonable price. Address Key 261, "American Artisan," 1900 Prairie Avenue, Chicago.

FOR SALE—TWO GIANT CHRISTIE Vacuum furnace cleaners, used. $40.00 each. These are in workable condition and make satisfactory heavy duty furnace cleaners. For further information write Lennox Furnace Co., Marshalltown, Iowa.

FOR SALE—14-INCH COPPER VENTILATOR, never been used. No reasonable offer refused. Address Home Heating and Air Conditioning Co., 20 West Hinsdale Avenue, Hinsdale, Illinois.

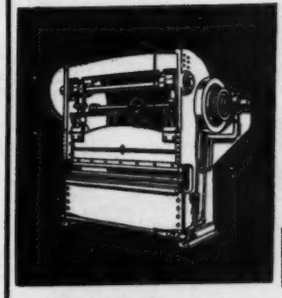
MISCELLANEOUS

Patents and Trade Marks
Philip V. W. Peck
Barrister Bldg., Washington, D. C.

MAKE SOME MONEY AND HAVE SOME fun doing it. Put on a minstrel show, play, operetta. Trade and social groups are following the idea successfully with our material—plays, operettas, musical comedies, minstrels, comedy and revue songs, blackface skits, vaudeville acts, monologs, dialogs, recitations, juvenile plays and songs, musical readings and other entertainments; make-up goods. Catalog free. T. S. Denison & Co., 623 So. Wabash. Dept. 26, Chicago.

SHEET METAL MACHINERY

PRICED TO SELL — READY TO SHIP
Draw on the MOST COMPLETE STOCK IN AMERICA



REBUILT BARGAINS

14 ga. Unishear M. D.....$ 65.00
12 ga. Quickwork Shear 30" throat 195.00
30"x2" Plain Roll..... 15.00
Turn. Wir. Burr. Machines.. .....$8.50 to 10.00
Nia. Hvy. Hulbert Dble. Seamer 35.00
5 ft. Chgo. Steel Box & Pan Brake 185.00
18 ga. Thrtless Shear..... 20.00
Brakes Chgo. Steel Hand 3'14; 4'16; 6'14; 8'18; 8'16; 8'14; 10'14 ga.

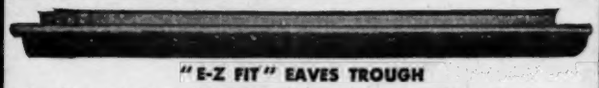
Circle Shears 18 ga. to 10 ga.
Welders—Arc, Mitre & Butt.
12 KW AEF Spot Welder.
Spinning Lathes 18" to 44" swing.
Gang Presses 6 ft. to 16 ft. long.
Brakes Chicago Steel Power 10' 7/8" —10' 1/4" Motor Drive.
Press Brakes 8' 14 ga; 10' 7/8"; 10' 1/8".
Bar Folders 28", 30", 36", 42".
Shears Power 10' 1/4" gap; 48"16; 30"14; 42"14; 72"10 ga. Gap.
Gutter Beaders 30" and 8 Ft.

NEW & USED

"Send Us Your Inquiries—We Have the Stock"
ROLLS — SHEARS — BRAKES — SPOT WELDERS
PUNCH PRESSES — PRESS BRAKES — FOLDERS
DRILLS — HAND MACHINES — STAKES

HAND & POWER

INTERSTATE MACHINERY COMPANY
130 S. Clinton St. - - - - - Chicago



"E-Z FIT" EAVES TROUGH
Bead is cut back, making it easy to put gutter together. Requires no soldering—not affected by expansion or contraction.
Write for Catalogue. Order from your Jobber.

"BB" The mark of quality
Eaves Trough . Gutter Hangers . Conductor Pipe
Conductor Fasteners . Mitres . End Pieces and Caps
Conductor Heads . Ornamental Straps . Ventilators, etc.
BERGER BROTHERS CO.
229-237 Arch Street, Philadelphia, Pa.

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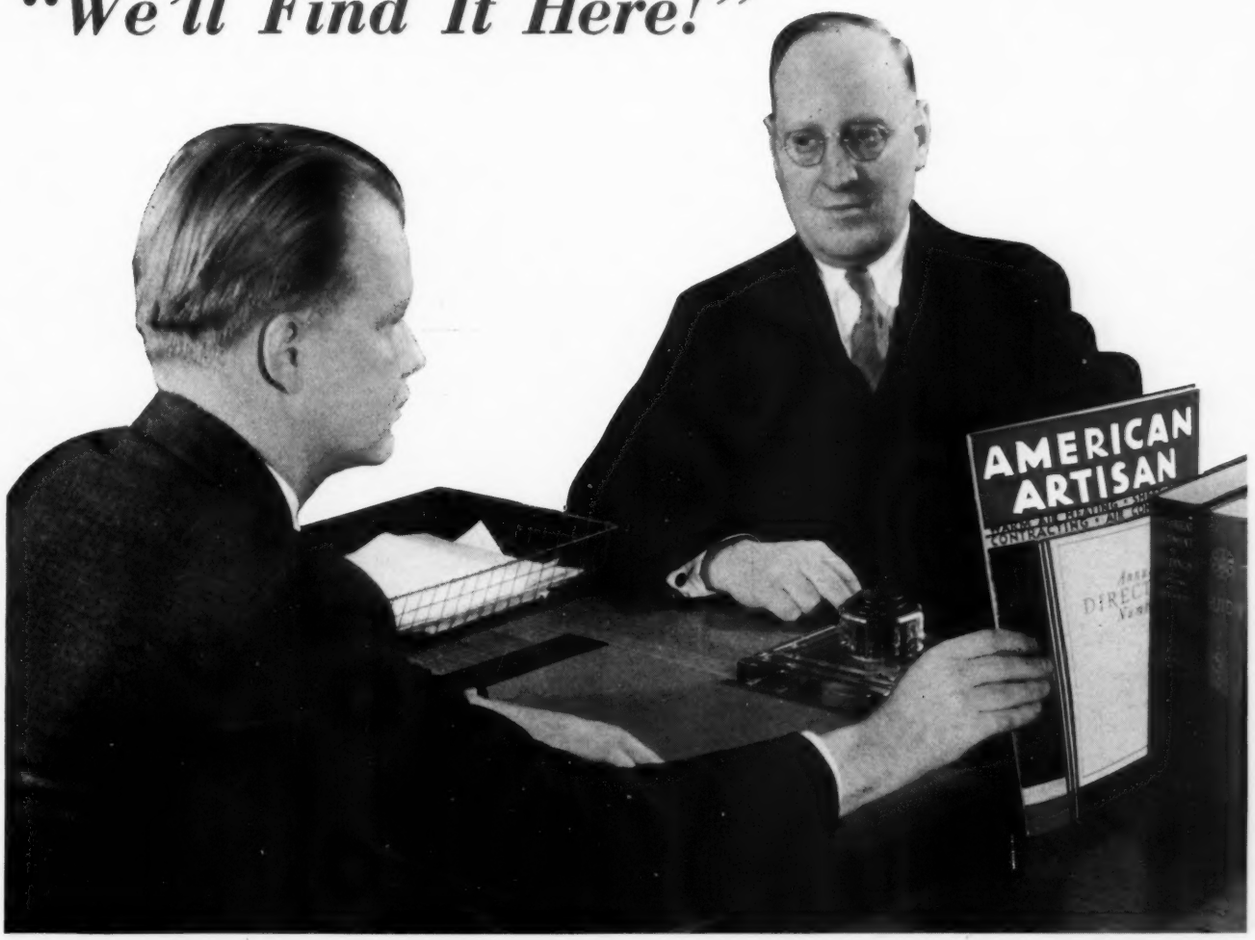
For Complete Lists of Furnace, Sheet Metal and Air Conditioning Products and Sources of Supply Consult AMERICAN ARTISAN ANNUAL DIRECTORY NUMBER

"We'll Find It Here!"



HERE is a vital fact no far-sighted manufacturer in the warm air heating and sheet metal industry can afford to overlook:

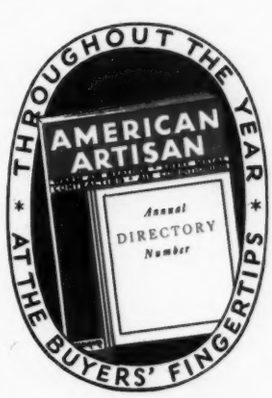
The Annual Directory Number of AMERICAN ARTISAN, now in preparation, will not only reach the *important* buyers in this industry; it will occupy a *necessary place in their buying activities throughout the entire year.*

For their estimating, buying and specifying needs this valuable guide will serve the warm air heating and sheet metal contractors reliably and accurately, day in and day out, the whole year—an opportunity for the manufacturer to present his complete line, confident that he is thereby getting representation where he wants it, when he needs it, at a cost which justifies the claim that this is *the advertising buy* of the year.

Until last year, when the first issue of the Annual Directory Number was distributed, this field had never been served by a reference book to which the buyers of the industry could turn when in need of buying and technical information. From no other single source could they secure its valuable data. The important buyers in the industry have been universal in their acceptance of this important medium.

Scheduled to reach the desks of the buyers of the industry about January first, the forthcoming issue of the Annual Directory Number will be greater in scope, and more helpful in its service than was the initial issue.

The Annual Directory Number will comprise a complete Classified Directory of products in use in this field, indexed and cross-indexed; a section devoted to Trade Names; an alphabetically arranged list of Manufacturers' Names and Addresses; valuable technical information, along with the well-known customary features of AMERICAN ARTISAN.



That the men in the industry appreciate these valuable features has been definitely proven. It is information which they *need* in their business.

Consider, with this service, the value to buyers and to you of being able to turn to a complete showing of your line for information on sizes, capacities, features and appearance of your products. That *is* a service—helpful to them, *profitable to manufacturers.*

Buyers keep this handy reference book right on their desks, throughout the year, readily available at all times for consultation. Always at their finger tips, many regard the Annual Directory Number their most important office accessory.

The Annual Directory Number offers the manufacturer his greatest opportunity to place his message before the buying power of the industry. Because it affords the advertiser twelve months' representation—right on the buyers' desks—he could choose a means no more economical for expending his advertising dollar.

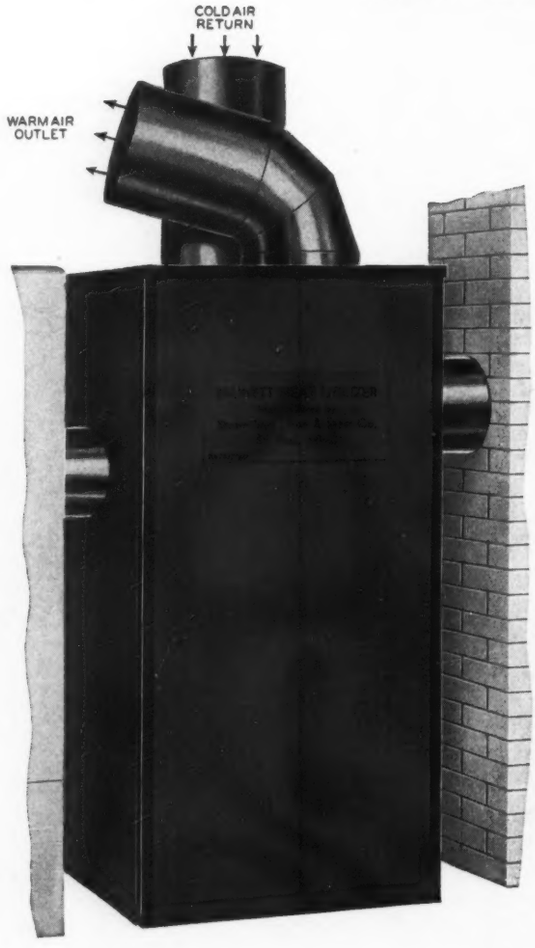
Because the Annual Directory Number *is* a reference book, advertising copy which will give buyers complete buying information is recommended for use in this issue. The manufacturer who uses this type of advertisement provides the buyer with information which he *needs* and *welcomes.* Like the directory material this kind of advertising copy is referred to *throughout the year.*

Our advertising staff is at your service and will aid in the preparation of this type of advertising. We will submit, for your approval, a suggested presentation of your line or your service for use in the Annual Directory Number; just send us your literature and a suggestion will be prepared for you. Provided you act promptly sufficient time remains. AMERICAN ARTISAN, 1900 Prairie Avenue, Chicago, Illinois.

The

BRUNETT PATENTED HEAT UTILIZER

With or Without Humidifier



WILL SAVE

25 to 60% Fuel Cost

More Customers! Larger Profits!

FOR YOU—

This is the time of the year everyone is worrying about high fuel cost. Show your customers how they can reduce their fuel cost with a Brunett Patented Heat Utilizer—and you will profit by it.

YOU can sell every heating job, whether warm air, hot water, steam or vapor, in any home, church, store or commercial building.

It is a known fact that more heat is wasted up the chimney than is used to heat a building. The Brunett Patented Heat Utilizer will save many of those wasted dollars. The Unit is placed between the heating plant and the chimney. It provides a constant fan-forced stream of fresh air which has been warmed to the proper temperature by the hot smoke and gases that have been formerly wasted up the chimney.

The Brunett Heat Utilizer is inexpensive and can be installed with or without Humidifier, and without any inconvenience. Requires no service whatever. The decorations of the Utilizer will match recreation rooms.

WRITE FOR DETAILED INFORMATION

BROWN SHEET IRON & STEEL COMPANY

Pioneer Welders of the Northwest

964 BERRY AVE. NESTOR 7137 SAINT PAUL, MINNESOTA

VOLUME

TIGHTLY BOUND

BEST COPY

AVAILABLE